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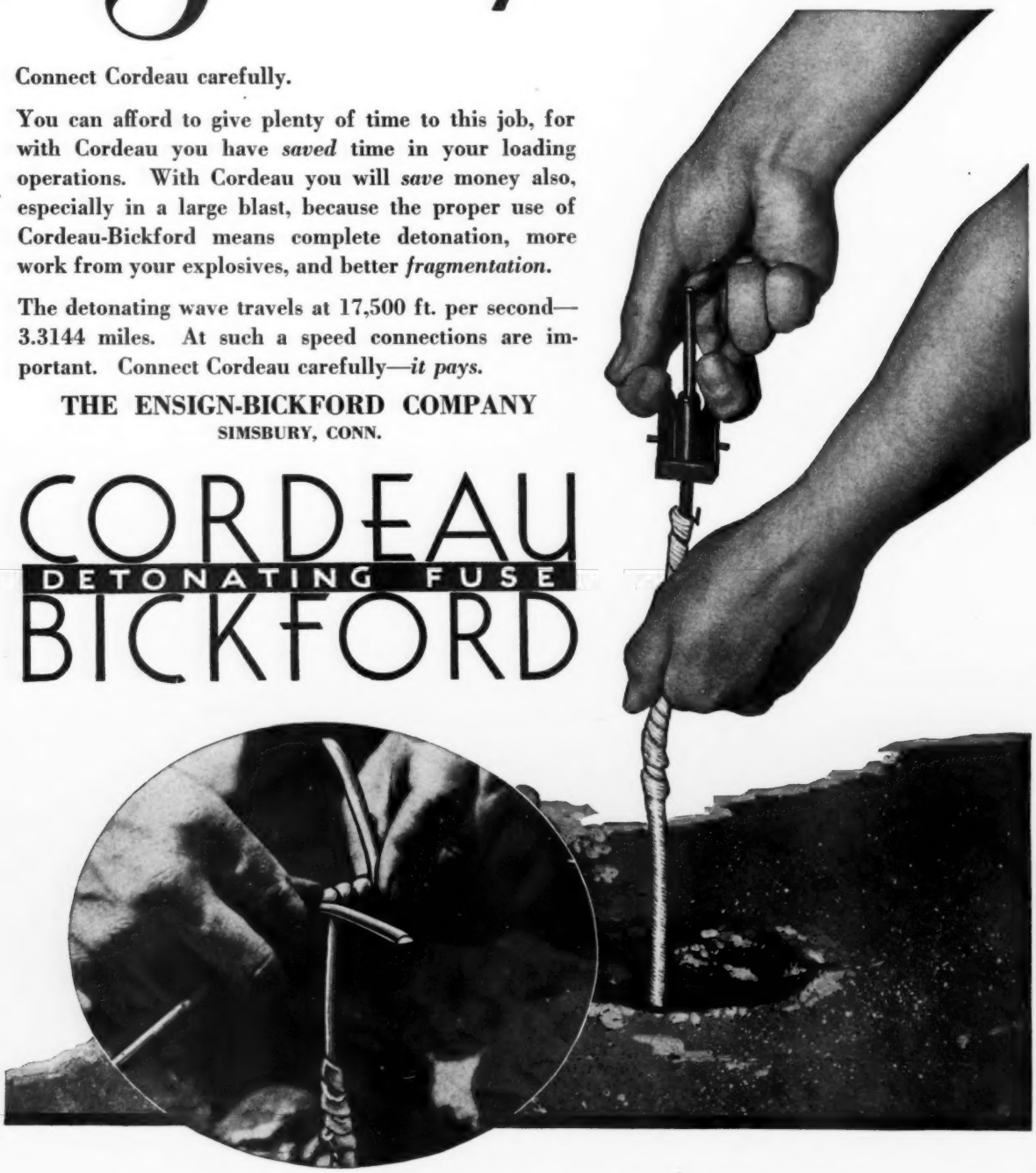

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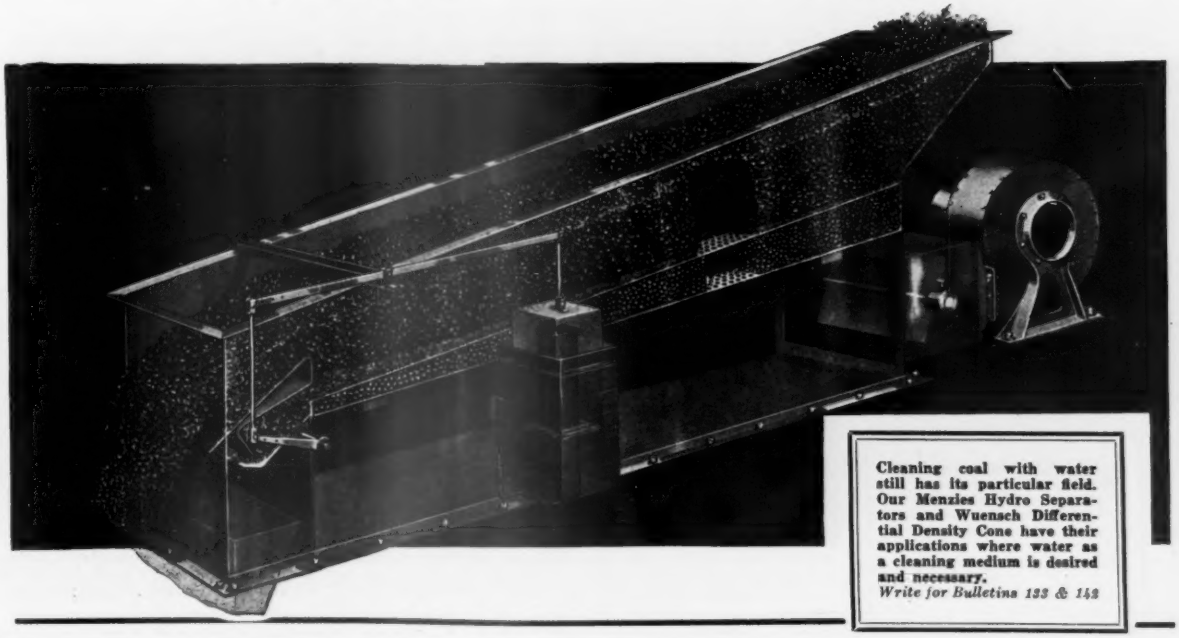

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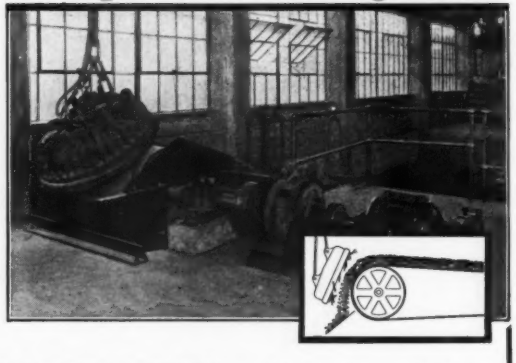

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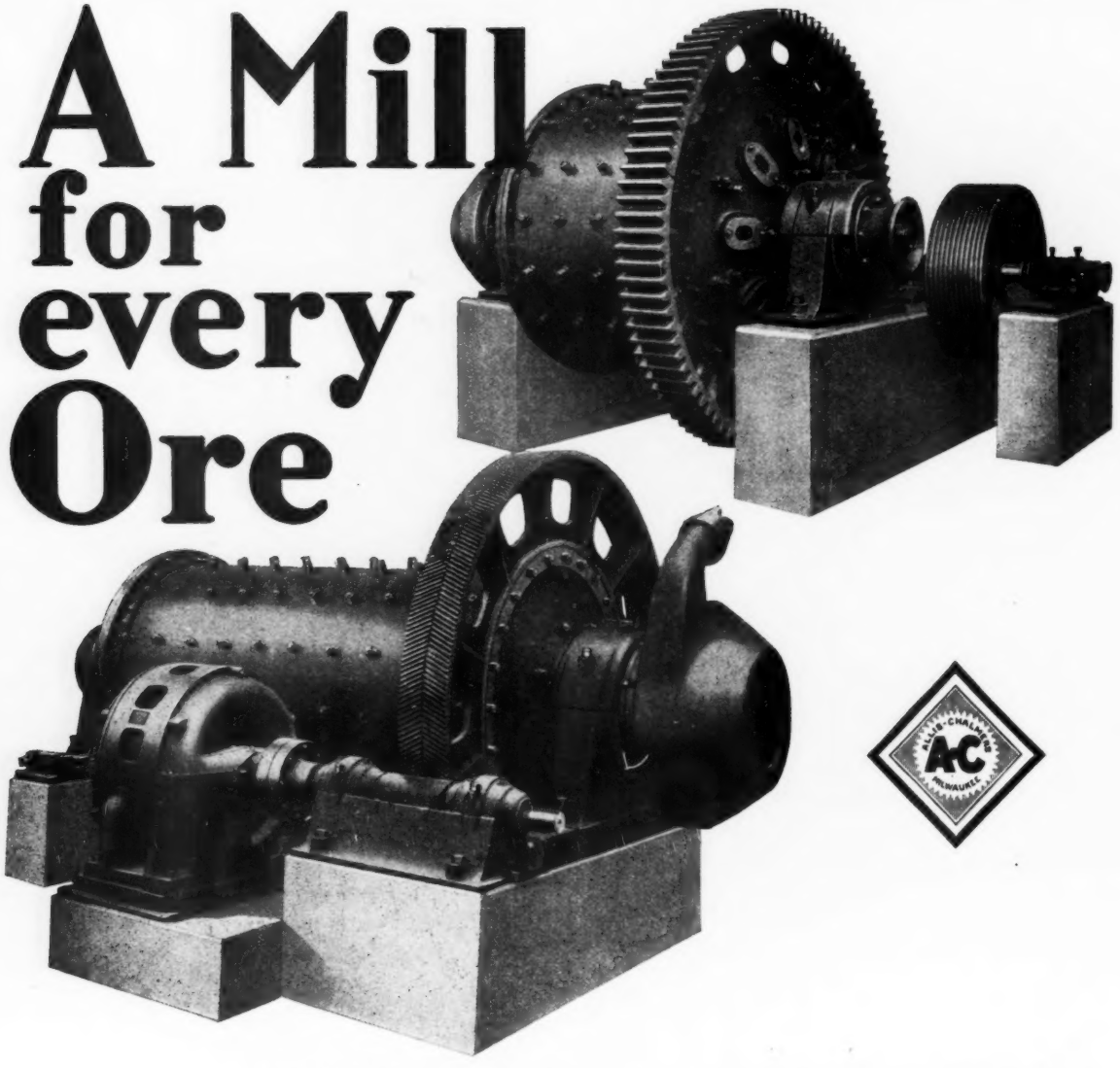

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Emulatory Not Retaliatory

A RECENT communication to President Hoover, signed by 177 persons representing 39 colleges, and a few others all representing themselves to be "leading economists and authorities on the tariff," asks the President to "eliminate the inequalities of the Hawley-Smoot bill, especially those which are causing retaliation abroad."

This petition recites that these same people and several hundred others had appealed to the President in May, 1930, to veto the Hawley-Smoot tariff bill. The statement is made in this petition that "the record is conclusive that the Fordney-McCumber Act of 1922 and Hawley-Smoot Act of 1930 caused foreign nations to enact retaliatory tariffs directly aimed at the American producer." It is further alleged that "at the recent Ottawa conference representatives of the British dominions from five continents publicly united to retaliate by raising tariff walls about the British Empire."

This statement is made apparently without recognition of the facts involved and of the new fact that depreciated currencies in most foreign countries have practically wiped out the differentials which the tariff levies were calculated to overcome by a lowering of the value of the actual wages paid. As a matter of fact it is immediately necessary to increase the rates of the Hawley-Smoot bill under the flexible provisions of the tariff law in order to prevent such a flood of imports as will meet all domestic requirements in certain lines of imports thus increasing unemployment.

What a world of information these petitioners would gain if forced to earn their livings for a few years in the industrial world.

Great Britain for many, many years was considered a free trade country. Such tariff duties as were exacted were for revenue rather than protection. During the greater part of these same years the United States imposed tariffs chiefly for protection and but incidentally for revenue. During these years Great Britain declined from the leading industrial nation of the world to poverty, unemployment, and a surrender of the gold standard which brought her to the verge of bankruptcy, while the United States grew from a very small nation, weak both financially and industrially, to the greatest industrial nation in the world, possessed of almost half of the world's gold supply. During the period following 1922, the date of the Fordney-McCumber tariff bill, the most marvelous industrial prosperity that the world has ever seen, began in the United States. This growth was so rapid as to violate sound economic principles, to bring about an abuse of credit which terminated in the financial crash of 1929. The Hawley Smoot tariff did not exist at the time of that crash and therefore can not be charged with responsibility.

The so-called retalatory tariffs of Great Britain and other countries, instead of being retalatory are emulatory. They were not established for purposes of retaliation, but to emulate those fundamental principles which have brought success to the United States and in the hope that through their enactment similar success would come to the enacting countries. The Ottawa conference was also emulatory and not retalatory. It undertook to do for the various parts of the British Empire exactly what the 48 States of the Union are and have been doing to stimulate trade among themselves. This grew out of the Buy-British campaign and when it found that price is the controlling factor in securing trade, in order to effectually emulate the industries in the United States it levied a protective tariff to enforce the inter-dominion business relations.

In the face of these conditions it would seem unwise to ignore all of the facts involved in our industrial life and set up a theory impossible of execution and contrary to all known bases of industrial prosperity. This country is very fortunate in having many men in control of its business affairs with broader knowledge, keener insight and better judgment, else Australia might well be the great industrial success of the world and the United States more nearly like Australia.

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The MINING CONGRESS JOURNAL

NOVEMBER
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Editorials

Tariff and Markets

TARIFF has always been a favorite subject with the politician. Parties have come into power because of their advancement of a certain position on this subject. In this, a presidential year, we find that the question of tariffs has not been neglected. It is a major part of the political platform of each party. It is no secret that there is in reality little difference of opinion in the two major parties on this subject when it comes to a vote. Most of the difference is ballyhoo.

When Congress convenes in December, a question for consideration is tariff and this in spite of the fact that the present administration has attempted, through the Tariff Commission, to take it out of the realm of politics as practiced in years past. There are many Republicans, as well as Democrats and Progressives, who believe that the Smoot-Hawley bill has been a detriment, rather than a help. Those who are of this opinion may be in the majority after the fall elections. But whatever the result of election and whatever the effectiveness of the present law, it is quite apparent that Congress will be forced into a consideration of the tariff. The mining industry is vitally interested in this subject. It must not be faced with the necessity of lowering its wage levels to compete with the low wage foreigner. It must not be compelled to abandon its home markets to any foreign power, who through the disregard of human needs prevents fair competition.

Stabilization and The Coal Industry

THE plight of the coal industry is a familiar subject. We have heard much about it both from the industry which has insisted in fighting its own battles, and from the politicians who feel that coal is charged with a public interest.

This year has seen many proposals for the stabilization of coal. The last session of Congress advanced at least three major proposals; Appalachian Coals Incorporated was developed and there has been much discussion of the subject. The latter proposal has been determined illegal under anti-trust laws in the lower courts, and awaits a Supreme Court trial. The former are all still with us and unquestionably will be brought out at the coming session of Congress.

First, let us consider what we mean by "stabilization." As we understand it, it means the bringing up of production to meet a market demand, with a limiting of production to the same basis; to create a uniform production to meet a uniform market.

The great stabilizer of the world is the law of supply and demand, a law unerring in its results. With an increased demand comes a willingness to pay increased prices. The greater the price, the larger the profit. Large profits always stimulate production and, as a natural sequence, machinery is quickly developed that in turn creates a surplus which lowers price levels, destroys profits, until it finally breaks down over-production.

The law of supply and demand is absolutely accurate in its power of stabilization over a term of years. That same law is responsible for the creation of temporary fluctuations during shorter periods, radical in nature, creating unnecessary waste of capital investment for equipment necessary to supply a temporary shortage, which, when met, leaves industry with idle machinery which before the next cycle becomes useless and obsolete.

To avoid this waste and to bring about a proper balance between production and consumption; to create conditions under which labor is constantly employed and machinery is continually used; to assure capital a continuous earning; to fully supply market demands; and to maintain price levels upon a more or less even basis—is perhaps what is intended as "stabilization."

So far, all of the proposals to bring about this desired state in the natural resource industries have met with opposition by the courts, by the public and by those involved in maintaining the industries in question. The problem is not settled. It is certain to be a topic of lively interest during the coming sessions of Congress, for the political group is more convinced than ever that "coal is charged with a public interest" and that the only way to protect the public and stabilize the industry is through some kind of government control or regulation. It would seem, therefore, that the coal operators might well make a real effort to agree upon some definite program which they are willing to support, not piecemeal and with reservations, not by factions and by districts, but to which the support of the whole industry may rally. We are all working to one end—a fair profit to the coal operator, a fair wage to the miner, and the cheapest and best coal to the public that is consistent with fair wages and profits. There should be a common ground upon which all can unite to bring about such a condition. If it can be found, coal can bring to its support the hearty cooperation of every other industry in a similar situation.

A Hopeful Sign

ONE of the most hopeful signs in the field of labor employment is that some labor union officials are now willing to consider business conditions in the fixing of wage levels. This has been manifest recently in the Illinois and Indiana coal disputes, in which the officials of the labor unions have given fair consideration to the possible earnings of the coal companies under the existing competitive conditions. It is true that these acts have been questioned by the employes and that radicals have attempted to establish a wage rate in excess of the possible earnings of employers, but it is gratifying to note that the leaders have taken the more liberal position and consider the problem with proper relation to the law of supply and demand.

Federal Taxation Today

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by

Hon. A. A. Ballantine

THE GREAT OBJECTIVE in taxation is to reduce the tax burden. The depression makes that objective far more desirable and at the same time far more difficult to realize. The estimate is familiar that in 1930 about 14½ cents of every dollar of national income went to governments, about 5 cents to the Federal Government and 10 cents to state and local governments. In 1931 and 1932, when income had suffered much more from the depression, the percentage so absorbed was undoubtedly larger. This tax drain must be lessened. Accomplishment of relief calls for informed and unrelenting participation of taxpayers and sound national leadership.

The basic remedy for high taxes is to lower the cost of government. On this point the President has declared:

> "The first necessity of the Nation, is to reduce expenditures of government, national, state, and local."

That declaration expresses the basis upon which the President has proceeded and is acting today. It is well to understand certain stubborn obstacles to reduction and be able to appraise and assist administrative guidance. Reduction is far from simple and mere lip service to the idea is of little value.

The war made a lift in the level of Federal expenditures which can not be overcome for many many years. It left us with public debt expenditures and provisions for veterans amounting each year to more than twice what it used to cost before the war to meet all expenses of maintaining the Federal Government. For the five years ending in 1915, annual expenditures of the Federal Government averaged about $720,000,000; for the war years 1917 to 1919, they averaged nearly $11,070,000,000. Post-war reduction could not carry expenses down to anything like the pre-war level and for eight years—1922 to 1929—they remained relatively stable and averaged about $3,640,000,000.

The principal items of post-war expenditures can be illustrated by turning to the expenditures for the fiscal year 1929. Of the $3,848,000,000 total, about $1,228,000,000, or nearly one-third, was for service of the public debt, including the payment of interest and repayment of principal required by law; $771,000,000, or about one-fifth was expended for veterans. About $676,000,000, or about 18 percent, was for national defense. The most striking fact about these Federal expenditures is that nearly 70 percent goes for the service of the debt for veterans and for defense. The balance for all other expenditures of the Government amounted to about $1,173,000,000.

EVEN FROM THESE few figures it appears that the problem of reducing Federal expenditures is far from the simple task of effecting the curtailment of a vast total of expenditures, all of substantially the same class. In fact, some expenditures can not be reduced, others can be reduced only with great difficulty and general expenditures are a comparatively small percentage and are made up of a great aggregate of items each presenting distinctive considerations and questions of policy. When any one declares that Federal expenditures can be cut in some impressive percentage, he should be called upon to specify where and how. A general reduction is little more practicable than a general surgical operation. Reduction is a matter of intensive concentration and struggle on details, as to every one of which dispute and dissention must be resolutely overcome.

The depression inevitably gave a further lift to Federal expenditures, although in this case the lift will be temporary. In the case of a business, hard times can usually be promptly met, at least in part, by reducing costs. The situation of the Government, particularly of the Federal Government, is different. Even while reductions are being made in ordinary expenditures, emergency and relief needs spring from the depression and necessitate unusual expenditures.

Emergency expenditures began in 1930 and increased in 1931, but showed their real increase in 1932, when the total of all expenditures reached the high figure of five billion dollars. This represented an increase of $1,500,000,000 from the fiscal year 1927, which was the recent year showing lowest expenditures. This increase has sometimes been erroneously discussed as if it represented a mere swelling of the cost of usual Federal activities. The fact is that emergency expenditures directly and indirectly attributed to the depression more than account for the increase.

COMPARING EXPENDITURES of the Federal Government for the fiscal year 1932 with those for the fiscal year 1927, there will be found in the 1932 year the wholly new expenditure for the capital stock of the Reconstruction Finance Corporation and for additional capital stock of Federal Land Banks, together amounting to $625,000,000. Increase due to loans from the Agricultural Marketing Fund accounts for $136,000,000 of the excess, and acceleration of work-making activities on the Government's construction program for another $400,000,000. There must be added an increase of about $250,000,000 in the charges on the budget for veterans of the World War, and $176,000,000 for an increase in the postal deficiency due to the depression. These items, which by no means cover all of the unusual expenditures, aggregate more than the net increase in total expenditures from 1927 to 1932. Without here attempting a detailed analysis or a complete definition of what constitutes the unusual and what the normal function of government, it is clear that, apart from these special items of increase which I have indicated, the net expenditures of the Federal Government were no more in 1932 than five years earlier.

In the main, the extraordinary expenditures for 1932 were part of a comprehensive program of constructive national action, designed to fight the depression and to lay the foundation for broad recovery in business and employment. The Nation will be repaid many times over for the cost of placing the strength of the Federal Government behind our whole business and credit structure at the time when it was subjected to unparalleled strain. Acceleration of recovery will result not merely in the elimination of emergency expenditures; it means also easing the tax burden through increase of ability to pay.

While convinced of the wisdom of carefully conceived emergency expenditures, the administration has fought for the curtailment of expenditures where curtailment was possible. The budget submitted to Congress by the President last December was necessarily planned so as to provide for carrying on the Government according to existing legal requirements. Nevertheless that budget showed reductions in expenditures of $370,000,000 below 1932 expenditures.

The President insisted on further economy through changing the law so as to bring about curtailment of certain functions and reduction in the cost of established services. Following the general line of his recommendations, an economy bill was introduced into the House which it was estimated would result in a saving of upwards of $200,000,000, including $90,000,000 from reduction in personnel and compensation of employes, savings from compulsory retirement, and the like; $17,000,000 from miscellaneous savings; $49,000,000

* Under Secretary of the Treasury, Before Annual Meeting of Associated Industries of Massachusetts, Boston, Mass., October 20, 1932.

from revision of veterans' legislation, and large savings from the reorganization and consolidation of bureaus and divisions. When the bill finally passed the House on May 3, however, the prospective savings had been squeezed down to from thirty to fifty million dollars.

As reported to the Senate, savings through the measure were restored to above $200,000,000, but again the bill seemed doomed. It was only after the most urgent personal appeal by the President in the Senate at the end of May, for the protection of the finances of the Government through the enactment of economy measures among other means, that the bill was finally passed, with estimated savings of some $150,000,000. Taking into account this saving and the fact that many of the emergency expenditures of 1932 did not have to be again provided for in 1933, total appropriations for the 1933 year, while greater than the amount which was recommended by the administration, will be less than expenditures for 1932 by an amount of approximately one billion dollars. That is at least a start in the right direction.

DURING THIS PERIOD the hard-pressed taxpayer has needed zealous protection from unwarranted burdens upon the Treasury. Such a burden would have been involved by the project which passed the House of Representatives, but was thereafter defeated, for expending well over $1,000,000,000 for a miscellaneous improvised program of minor public works scattered throughout the land, without reference to real needs. If the House had had its way, the Government would have had to make immediate cash payment of the maturity value of the adjusted service compensation certificates held by veterans, which would have required an expenditure of over $2,000,000,000. It was proposed that this payment be effected not through funds obtained in the ordinary way through taxation or borrowing but by the issue of fiat currency, a course which would be calculated in the end to confront the taxpayer not only with additional tax burdens but with the disastrous consequences of an unsound currency. Such projects still have to be fought, for they would destroy any hope for relief of the burden of Federal expenditures.

The administration has not relaxed its persistent efforts for further reduction of Federal expenditures. Steps are under way for further reductions for the fiscal year 1934. A concrete plan for reduction is now being formulated and will be presented to Congress in December. These plans include not merely drastic reductions in appropriations for expenditures on established lines but a specific plan for reorganizing the administrative structure of the Government. On the President's insistence this was finally authorized by the Economy Act, although with the limitation that reorganization can not be put into effect until after it is reported to Congress.

Increases in taxes are always hard to bear, not merely because they attack the pocketbook but also because they are a burden upon business. When the depression was in its earlier phases it was hoped that no new tax burden would have to be imposed. Acceleration of debt retirement beyond the rate called for by sinking fund and other statutory provisions had given what was in a sense a reserve of some $3,460,000,000 which in a lean period might be drawn upon through debt replacement. If the depression had followed the pattern of 1921, or if the anticipated recovery which started early in 1931 had not yielded to new adverse developments in Europe, business might have been spared from the scourge of tax increases.

The fiscal year 1930 showed a surplus of $184,000,000, and the fiscal year 1931, partly as a result of increase in emergency and relief expenditures, showed a deficit of $903,000,000, of which $440,000,000 was accounted for by debt retirement. This was, of course, a matter of concern, but in view of the financial accomplishments in prosperous years, it was not in itself alarming.

In the fall of 1931, after the depression had entered upon its second and far more intensive phase, it became clear that the reduction in revenue and the increase in emergency expenditures would create deficits so large as to use up the theoretical reserve, and that, notwithstanding the hardship which it involved, a determined upward revision of the tax structure must be urged.

In fact, Federal tax revenues were about halved as a result of the depression, the total declining from about $3,630,000,000 in 1930 to less than $1,890,000,000 in 1932. In the post-war years our main reliance had been upon the income tax, which provided about two-thirds of the revenue from taxes. The other third was divided roughly in equal proportions between customs and miscellaneous taxes. The miscellaneous taxes included the tax upon estates, those collected by the sale of documentary stamps, and a number of lesser importance, but the principal tax was that collected on tobacco products, which amounted to as much as $450,000,000 a year. The effect of the depression was registered in reductions of all three major sources of revenue, even those which in the past had been most dependable. The major decline was, however, in the income taxes, which alone showed a reduction of about $1,350,000,000 during the two-year period.

WHEN IT BECAME CLEAR that new tax burdens must be imposed in the larger interest of taxpayers and of all of our citizens, the administration acted with vigor. In his message to Congress when it assembled last December the President declared:

> "The first requirement of confidence and of economic recovery is financial stability of the United States Government."

He pointed out that the preservation of that stability demanded not merely all possible reduction of expenditures but also, for a time, increase in taxes. The Secretary of the Treasury in his annual message to Congress last December stated:

> "It is not easy for any people to determine to assume a large additional tax burden at a time when their resources are depleted through business depression, but in the long run they will best serve their own interests by doing whatever is required to maintain the finances of their Government on a sound basis. . . ."

The Secretary proposed specific taxes to produce the needed increase in the revenue. These recommendations included increase in income tax rates so that the higher surtaxes would have been about doubled, the increase to apply upon incomes for 1931, as well as thereafter; increase in estate taxes; new miscellaneous excise taxes, selected chiefly with a view to obtaining from each a large amount of additional revenue with relatively little administrative cost and difficulty and without undue interference with business.

The Ways and Means Committee of the House undertook resolutely to formulate a program of its own and with the cooperation of the Treasury drew up a bill which, in a general way, followed the lines of the Treasury's proposal except that the committee substituted for most of the Treasury's miscellaneous tax proposals a general manufacturers' excise tax at 2¼ percent. As originally proposed, this tax was estimated to yield approximately $595,000,000 in a full year.

The committee's proposed manufacturers' excise tax was based largely on the Canadian model and was the result of careful and thorough study by the committee working with the cooperation of the Treasury and with the advice of an expert made available by the Canadian Government. This tax was framed so as to impose the levy upon a particular article only at the point of sale as it left the last stage of manufacture and entered into the channels of distribution, thus avoiding pyramiding. The measure as finally prepared was free of many features of the Canadian tax which had previously led the Treasury to the conclusion that the Canadian tax would be unsuited to conditions in this country. The Secretary of the Treasury immediately gave to the Ways and Means Committee bill his entire support and urged its adoption.

The House of Representatives permitted the carefully devised measure of its Ways and Means Committee, unanimously reported, to be torn to pieces. The bill was not referred back to the committee but was written on the floor of the House. The result was a period of great uncertainty and long delay which further undermined confidence, aggravating and prolonging the depression.

In the Senate the bill was long under discussion with much difference of opinion as to what plan should be followed in eliminating undesirable features of the bill as it finally passed the House and obtaining the necessary revenue. Although the need for stabilizing the finances of the Government was most pressing and was constantly urged upon Congress by the administration, it was not until June 6, after the President's direct appeal, that a revenue bill was finally enacted. That was an act which did not accord either with the Treasury program or the Ways and Means Committee program. Its virtue was that it provided for budget needs on a scale which overcame grounds for concern for the public credit. The new miscellaneous taxes were limited in application to July 1, 1934, with the exception of the tax on gasoline, which was put on for only one year.

UNDER THE NEW revenue act individual income taxes were drastically increased so that combined normal and maximum surtax reached 63 percent.

(*Continued on page* 30)

Have You Heard?

PUBLIC UTILITIES are receiving considerable attention at the hands of politicians in the campaign addresses. Governor Roosevelt favors "retention of title to all water power sites by the people, governmental ownership and operation of utilities, 'when necessary' and Federal regulation of holding companies. . . ."

STATE, NATIONAL AND LOCAL taxes collected in 1913, according to National Industrial Conference Board, amounted to over $22 per person in United States; this had increased, in 1930 to $83 per man, woman, and child, with total tax of $10,000,000,000, of which National Government took $28 per person; state government $14; and local government $41 per capita. 1931 and 1932 will show increase. . . .

TWO SALES TAX BILLS are pending before Alabama legislature, one levying a sliding scale on sales, and the other applying a 2 percent general sales tax, with lower rate for jobbers and manufacturers. . . .

UNITED STATES CHAMBER OF COMMERCE, through its National Committee on Federal Expenditures, estimates that by 1950 "our veterans relief will reach a peak of $4,500,000,000 per year, if present trend and interpretation of legislation is followed." . . .

FOUR MILLION TWO HUNDRED THOUSAND DOLLARS is the value placed, by the Department of Commerce, on exported industrial machinery for August. . . . Exports of mining, oil well and pumping machinery totaled $1,200,000. . . . Metal working machinery exports increased 37 percent.

ACCORDING TO A RECENT REPORT by the U. S. Geological Survey, the Ashland Coal Field of Montana, estimated resources of this field are 10,750,000,000 tons; average thickness of seam is 6 ft., but outcrops of coal beds 10 ft. thick are common, and beds 20 to 25 ft. thick occur in several localities. . . . Coal is sub-bituminous. . . . no railroads in this field, . . . proper transportation facilities will permit mining on commercial scale. . . .

THE FEDERAL GOVERNMENT suffered a loss of $177,283.80—or 30 percent—in the operation of the Alaskan Railroad during the fiscal year. . . . In the past three years this Government-operated project has cost the people the substantial sum of $2,239,337.42. . . . Road is 470 miles long and has a branch 38 miles long to famous Matanuska Coal Fields. . . .

NEW POLISH TARIFF effective October 10, imposes duties on many items imported from United States, including steel, machinery and electrical equipment. . . . duties on these items raised 10 percent to 100 percent. . . .

THE RAILROAD EQUIPMENT CREDIT CORPORATION, which will finance purchases of equipment by the carriers, has been organized, with H. A. Wheeler, head of the Railway Business Association, elected president, and W. H. Woodin, American Car & Foundry Company, Chairman of the Board. The list of directors is equally formidable.

THE USE OF PURCHASED POWER in the coal industry increased from 26,704 hp. in 1909 to nearly 3,000,000 hp. in 1929. . . .

PROGRESSIVE MINERS' UNION of Illinois accepts wage scale proposal drafted by its scale committee. . . . Basis same as United Mine Workers scale of $5 a day, against which scale the new union was formed. . . . Mines operating under heavy guard. . . .

SENATOR DAVIS AND REPRESENTATIVE KELLY, both from Pennsylvania, announce their intention to "press for action on the Davis-Kelly Coal Control Bill," now before Congress. . . . Organized Labor heartily in favor of the bill, and will cooperate in securing its passage. . . .

APPALACHIAN COALS, INC., met opposition in its course through the Courts, when decision was handed down October 3, ruling against the proposed "Selling Agency Plan," as a violation of the trust laws. . . . Sponsors believe that proposal has excellent "fighting" chance in the higher courts. . . .

THE "SHARE-THE-WORK" movement has been officially endorsed by William Green, president, American Federation of Labor. . . . Urges labor to cooperate in finding work for jobless. . . . Unionized Labor has not taken kindly to the idea of "sharing" the job. . . .

L. S. CATES, president, Phelps Dodge Corporation, who has been several weeks in foreign countries, said recently that "the situation of copper producers in the United States will settle itself." He believes that consumption and production will be in balance by next spring. . . . Looks forward to 10-cent copper as best price obtainable for some time. . . .

AMERICAN FEDERATION OF LABOR believes that time has arrived when wages must be raised. This belief is not sustained by action among employers of labor, who are continuing the steady decrease in wages . . . most of which reductions have been arrived at in cooperation with the various groups comprising the Federation. . . .

PROHIBITION INVESTIGATORS in the year ending June 30, 1932, made 73,883 arrests: seized 11,833 automobiles; 61 boats; 23,165 stills; 15,244 beer fermenters, 3,261,746 gallons of beer; 1,655,677 gallons of spirits; 324,603 gallons of wine; 4,961,682 pounds and 959,624 gallons of distilling and brewing materials. . . . This resulted in the instigation of 66,108 cases, with 61,383 convictions, involving 44,678 persons who received jail or penitentiary sentences; 42,085 fines, amounting to a total of $6,469,746. . . .

F. A. MERRICK, president Westinghouse Electric & Mfg. Co., announces that his company will spend $1,260,000 for raw materials, supplies and development work that will open up new markets for electrical equipment. . . . Funds are immediately available and will be spent during next few months.

METROPOLITAN LIFE INSURANCE COMPANY estimates United States will attain a maximum population of 150,000,000 persons by 1970. . . .

BECAUSE OF GOVERNOR ROOSEVELT'S ideas on conservation of natural resources, and the power industry, National Popular Government League casts its vote for him. . . .

GENERAL BRICE P. DISQUE, director of Anthracite Institute, in a recent address said: "We know why we have lost, and we must and will take steps to preserve the industry. . . . Among needs of the industry is a price level that will bring safety, health and cleanliness and superiority of anthracite within reach of householders who have reluctantly turned to cheaper substitutes." . . . "Anthracite has not suffered because of appearance of any better fuel. It stands today the finest, cleanest, healthiest fuel available for domestic heating. It will be made available to the millions of families who can not now afford it, who would like to have it, and who will purchase it when the price is made right and the facilities for its use are modernized." . . .

A DEFINITE TREND TOWARD the return of copper cooking utensils is noted . . . special attention is paid to copper-ware with inside plating of chromium, which is a non-tarnishing cooking surface, with highly resistant wearing qualities. . . .

THE METAL MINES of the United States, in the year 1929, spent approximately $69,000,000 for its ordinary supplies used in production; $11,000,000 for fuel, and $14,000,000 for purchased electric energy. . . .

A. W. WHITNEY, President of the Brotherhood of Railroad Trainmen, states that the 2,000,000 railroad employes will resist to their complete and combined strength the proposed 20 percent wage reduction.

ACCORDING TO THE AMERICAN AUTOMOBILE ASSOCIATION, our vacation bill this year reached to amazing proportion of $2,000,000,000. . . .

COAL INDUSTRY OF THE UNITED STATES, in the year 1929 spent over *one billion dollars* in operating its mines. . . . this sum covered salaries, wages, supplies, and equipment. . . . The per capita consumption of coal in the U. S. in 1929 was 4.96 tons. . . . Wage earners received $813,000,000 which was 75 percent of total operating cost. . . . 14 percent was spent for supplies, new machines and equipment. . . .

STEEL INDUSTRY OF UNITED STATES, according to Dow-Jones compilation, suffered a deficit in first half of 1932 of $61,000,000 . . . property taxes were equivalent to one-third of this loss. . . .

BUREAU OF INTERNAL REVENUE has ruled that "electrical energy generated by the owner of a building and furnished his tenants is taxable when a charge is made for such energy." . . .

PITTSBURGH COAL COMPANY recalls large number of men, and announces that certain of its mines that have been closed down for months will immediately resume operation. . . .

CLEVELAND-CLIFFS IRON COMPANY, according to announcement by Mr. William G. Mather, president, will reopen its properties on a two-day-a-week schedule. . . . Mr. Mather gave as his reason for this action "recognition of the need for employment, rather than any marked improvement in ore trade." . . .

ANTHRACITE SHIPMENTS for the month of September increased over August tonnage, but were still 101,245 tons below same period in 1931. . . .

H. J. HAAS, president of the American Bankers' Association, in a recent address says that the great task of Government is ahead. Over-taxation is our greatest evil, and that "when taxation is used as a social measure to take an undue proportion of the property of certain classes to finance special benefits to certain other classes, it is a violation of our basic principle." . . .

GEORGE OTIS SMITH, chairman of the Power Commission, advocates better regulation of the power industry . . . believes that interstate transmission and holding companies should receive "Congressional attention." . . .

WORLD ECONOMIC CONFERENCE to be called by League of Nations in December. . . . London selected as host.

JOHN J. PELLEY, president, New York, New Haven and Hartford, R. R. Co., believes that "through the Federal and state governments taxpayers are now regularly contributing a very large part of actual cost of waterway, highway, and air transportation. . . . Railroads are compelled to pay entire cost of operation in competing with these mediums, and to operate at a profit. . . ."

FORTY-THREE STATE LEGISLATURES will hold regularly scheduled sessions during 1933. . . . Many states, including the 43 are expected to call their legislatures into special session, to consider reduction in taxes, and in the cost of government. . . .

BUREAU OF INTERNAL REVENUE has adopted more liberal policy in permitting corporations to deduct from their gross income for tax purposes, contributions to community chests, and similar charitable organizations. . . .

SENATOR BORAH HAS MUCH to say about our monetary system . . . says present "gold-standard-dollar" is not an "honest dollar," and advocates expansion of currency to "replace hoarded millions." . . .

F. S. CHASE, president, Chase Brass & Copper Company, says that "there has been a distinct improvement in the copper and brass industry for some weeks and there is reasonable ground that this improvement will continue, subject to seasonal conditions." . . . Price of copper and smelter are still materially below average cost of production in this country. . . .

D. C. JACKLING, president, Utah Copper Company and Nevada Consolidated Copper Co., announces that companies expect to keep mines in continuous operation. . . . Production now ranges about 7,000 tons a day . . . capacity is 60,000 tons a day. . . . Sale of millions of pounds of copper to Italian and French interests have cleaned up Nevada's stored surplus.

W. H. JOHNSTONE, OF THE BETHLEHEM STEEL CORPORATION, stated that 37,000 coal miners in the United States will lose a week's work this year because of the importation of foreign steel.

DEPARTMENT OF COMMERCE announces results of a survey of 199 trade associations, as to the status of business . . . 140 report improvement in business . . . 44 find business as unchanged, and 8 found business in their respective industries on continuing decline. . . .

Fuel Economy and Mining Efficiency

by

G. B. Southward

ACCORDING TO NEWSPAPER MEN, "If a dog bites a man, that is not news; but if a man bites a dog, that is news." Within recent months one of the great railroads of this country has perfected a device by means of which the coal consumed by a locomotive is reduced 9 percent. But this same thing has happened so many times during the past few years that, judged by newspaper standards, it is not news—it is just one more instance of where the dog has bitten the man again.

In saying this we are not calling anyone harsh names; neither are we criticizing this railroad or any user of coal for decreasing their operating expense by reducing their coal consumption. We further realize that fuel economies are designed by the consumer to reduce heat and power costs and not for the purpose of conserving coal as a natural resource; consequently the consumer is entitled to the cost savings which are made by his own efforts and invention. But we do want to point out that the economies which have been made in the use of coal have not been equalled by a corresponding increase of efficiency in the production of coal, and, as a result, coal mining has suffered while the coal consumers have profited.

THE AMOUNT OF FUEL reduction which has resulted from improving combustion efficiencies is shown by the following figures. During the past ten years the railroads of the United States have decreased their consumption from 170 pounds to 121 pounds of coal per ton-mile. Electric power companies have decreased from 3.2 pounds to 1.6 pounds of coal per kilowatt-hour generated. By-product ovens, by replacing beehive ovens, have effected recoveries of gas and fuel oil whose heat values are equivalent to a saving of 20 percent in the amount of coal used for these purposes. Improved furnace practices have reduced the coke used in iron and steel manufacturing by 16.7 percent.

In the year 1930 these four classes of coal customers used 210,000,000 tons of coal, but if they had all been operating on their fuel efficiency basis of ten years ago, they would have required 300,000,000 tons. Industrial steam plants are not included in this figure, but they also have improved and modernized their boiler practices, so we will not be far wrong in taking 30 percent as representing the average increase in combustion efficiency which has been made by the major users of coal.

WHILE THESE FUEL ECONOMIES have been going into effect, coal operators have not been exactly idle. During this same ten-year period the production for all men employed in bituminous mining, underground and on the surface, was increased from 4.2 tons per man day to 5.06 tons. This amounts to an increase of 20 percent in the productive rate per man and represents the increase in the operating efficiency which has been made by the bituminous coal industry as a whole. The figures for the productive rates of the men are averages for the entire country and taken by themselves might be considered as indicating that this increase had been general and had affected every mine and all men employed. This, however, is not true as a partial analysis will show.

The figures for all men employed include coal stripping. In 1930 there were approximately 20,000,000 tons of bituminous mined by power stripping, while in 1921 there were only 5,000,000 tons mined by this method. In 1921 the average tons per man day employed in the strip pits were 8.3 tons; this was increased to 16.2 tons in 1930—an increase in production efficiency of 100 percent. In 1921 there were 272,000,000 tons of coal mined by coal cutting machines. This was increased to 362,000,000 in 1930. In 1921 the average amount of coal produced by each cutting machine was 14,000 tons annually and in 1930 this had been increased to 25,000 tons. This amounts to an increase of 64 percent in the capacity of the machines and men employed in coal cutting. In 1921 all coal was loaded by hand shovelling into mine cars; in 1930 there were 47,000,000 tons of bituminous coal mined with various types of mechanized loading. Figures are not available which show the higher productive rate which has resulted from the employment of machines for loading, but we know that it is much greater than the average 20 percent increase made in all mining operations as given in the preceding paragraph.

Besides these three examples just cited, many other improvements in mining have been made. For instance, main line haulage performance has been increased by large capacity locomotives and bigger mine cars. Heavy steel rail, rock ballasted track, trip dispatching, time schedules and block signals have served to eliminate delays formerly considered unavoidable in mine haulage and have contributed to the reduction of mining costs. As in the case of mechanized loading, there are no figures to show how much these haulage improvements have increased the productive capacity of the men employed but we do know that it is much higher than the average increase of 20 percent for all men employed. We know further that we can consider every mining operation from the face to the railroad car and find many examples where each one has been improved, not only in advance of the total mining average but beyond the improvement made in combustion practice.

THE 20 PERCENT PRODUCTION increase made by the mine operators in comparison with the 30 percent increase in combustion efficiency made by the consumer would be very discouraging if it represented the best that could be done. But it is only an average figure and includes all bituminous mines—those which have completely modernized and those which have made little progress or improvement over the methods and performances of ten years ago. While the average figure does show that the coal producers as a whole have not kept pace with the advancement made by the consumers, the accomplishments of the modernized operations show that coal mining can be developed to equal and surpass the efficiency made in combustion performances.

A Modern Tipple at the Crescent Mining Company

by **W. P. Young***

WHEN COAL MINING in Illinois is spoken of, those familiar in a general way with the state visualize immediately the southern counties with their thick, clean No. 6 vein and with mines having a tremendous daily output. However, coal is still being mined to some extent in the northern counties. The first coal discovered by the white man on the North American Continent is said to have been along the bluffs of the Illinois River near the present city of Ottawa. Both upstream and downstream from Ottawa the coal measures outcrop. In the early days, many small mines along these outcrops contributed to the state's production. With the increased difficulties of mining after the easily workable coal was mined, and with highly efficient railroad transportation facilities available, production shifted to the central and southern part of the state many years ago. Peoria County is considered as being part of the northern Illinois field. Its chief producing vein is the No. 5, which averages about 52 in. in thickness in that county.

Previous to January, 1930, the Crescent Coal Company had operated in that field for many years. At this time the Crescent Mining Company, a subsidiary of the Bell and Zoller Coal Company, purchased the physical assets of the coal company. These assets included four producing mines with a combined daily production of 5,500 tons. A study of the mines plainly revealed the economy of abandoning two of the mines and concentrating production at the other two, which are known as LaMarsh No. 1 and LaMarsh No. 6. No. 1 is a drift mine. The problem of increasing its tonnage to help in making up for the abandoned mines was not so involved. No. 6 mine presented a different picture, in that it was a shaft mine. Coal was being hoisted in small wood cars on self-dumping cages. The capacity of the hoisting equipment had been reached at about 2,200 tons per day.

The decision to increase the production to 4,000 tons daily at this mine not only called for an installation of a new arrangement for bringing coal to the surface, which will be described in some detail later, but it called for a complete modernization and rehabilitation program, both above and below ground. On the surface former temporary buildings were replaced by substantial and adequate buildings, additional track facilities were provided both above and below the tipple, and a set of heavy-duty track scales was installed. The operating office was removed from Peoria, which is 15 miles from the mines, and transferred to the mines. Below ground both the power and haulage were modernized. Two additional 150-kw. motor generator sets with fully automatic control panels were installed, main-line haulage roads were equipped with 6/0 trolley wire, semiautomatic block signals were installed on the main haulage road. The old type wooden cars were replaced with all-steel cars of larger capacity, and 15-ton locomotives replaced 6-ton locomotives on the main line haulage.

A 40-ft. x 120-ft. central shop building of steel and glass construction was designed and built by Wisconsin Bridge &

* General Superintendent, Crescent Mining Co.

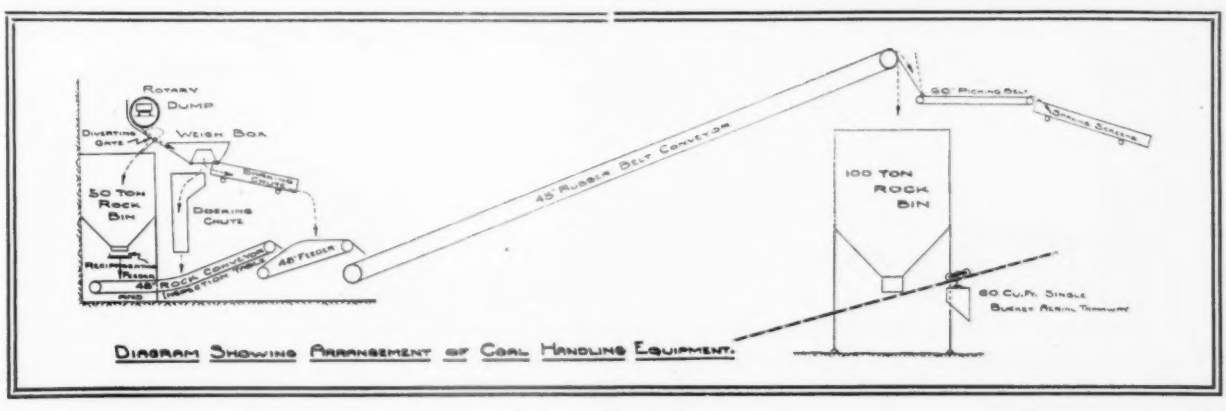
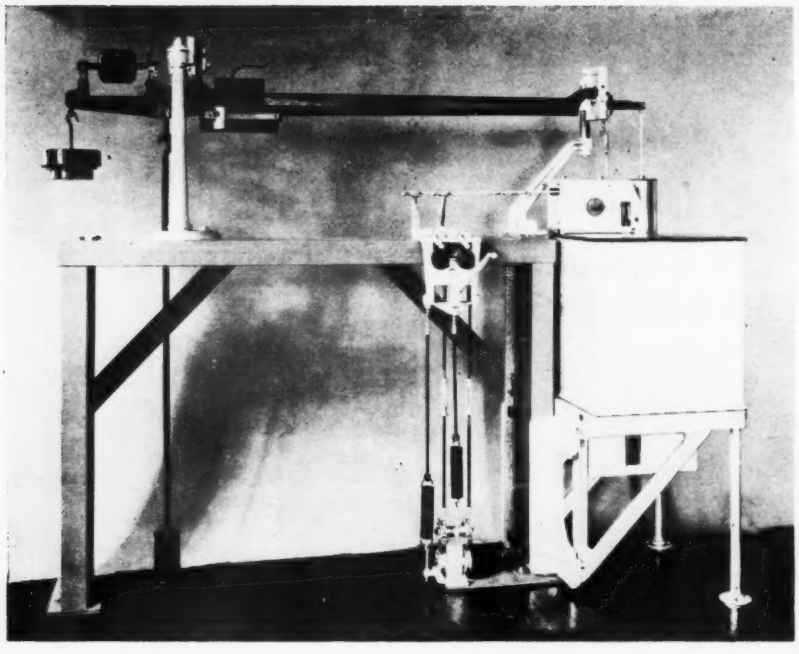


Diagram Showing Arrangement of Coal Handling Equipment.



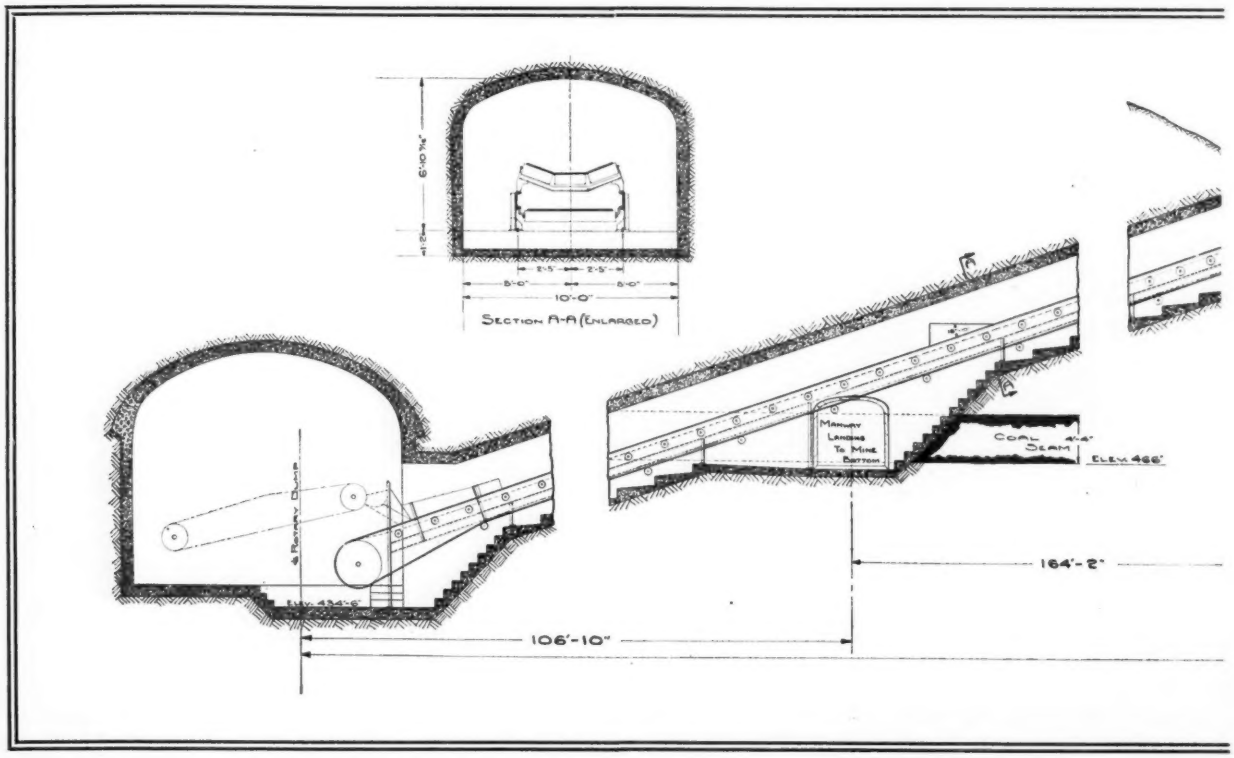
Streeter-Amet Automatic Weighing Recorder, Type "S," as used by the Crescent Mining Company

Iron Co., to house the machine shop, electrical shop, and supply room for both mines. The machine shop occupies the west end of the building and is equipped with a 5-ton electrically operated overhead traveling crane. Shop equipment capable of handling any repair or maintenance jobs found around mines was installed. One interesting piece of equipment is the automatic welder which is used in connection with a 40-in. lathe. With this equipment worn locomotive tires are rebuilt without removing the tire from the wheel center, and a considerable economy is effected over the old method of turning down the worn tires and eventually replacing them with new tires.

Other surface buildings, including a 58-ft. x 90-ft. mule barn with stable capacity for 66 head of stock, a 29-ft.x55-ft. office building, an addition to the miners' change house, and several small miscellaneous buildings, were constructed with concrete blocks and processed corrugated iron roof. It was felt that this type of construction would be practically free from upkeep during the life of the mines and at the same time would reduce the hazard from fire.

In order to facilitate the handling and weighing of cars below the tipple, it was decided to equip the new set of track scales with a Streeter-Amet automatic weighing device, so that the cars need not be "spotted" on the scale but could be weighed in motion. By eliminating the stopping and starting of each car on the scales one man has been able to handle all the loaded cars. This set of track scales was installed with a 5-in. reinforced concrete deck, which has been found to be very satisfactory.

The hoist shaft for No. 6 mine had been sunk at the foot of slope along LaMarsh Creek, with the shaft collar a few feet above high-water mark. Due to the fact that the coal under the flat terrain adjacent to the creek had only 30 to 40 ft. of cover, practically all of which was water-bearing gravel and clay, it was found necessary to lay out the bottom and mine workings all to the west of the shaft. The bottom layout was typical of the 1,000 to 1,500 ton mines in the field, with two tracks for loads extending 250 ft. from the hoist shaft and the empty cars being handled on the opposite side of the shaft by means of a kick back and car haul. The empty cars from the car haul were made up into trips in an entry parallel to the load bottom.

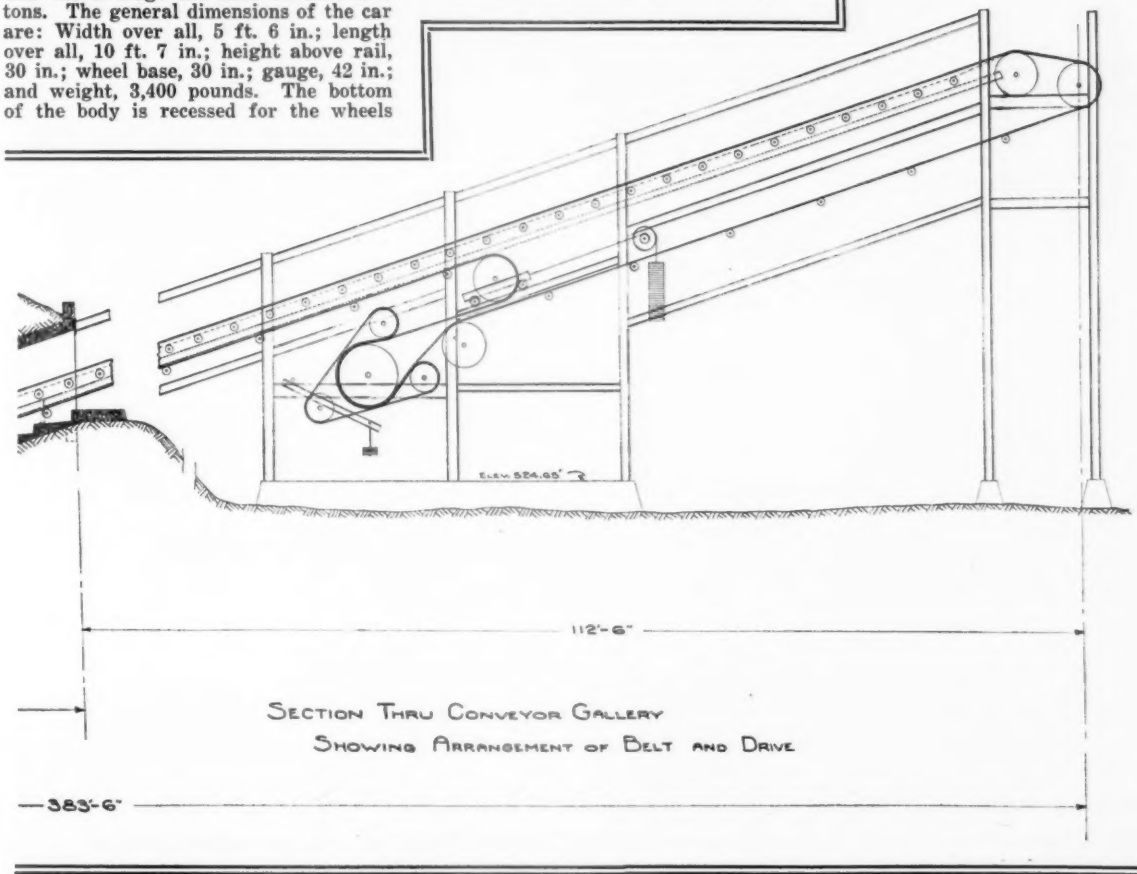


16' x 5' Jeffrey Double Inlet Reversible Fan installed at the Crescent Mining Company

Due to favorable operating conditions at this mine, it was desirable to produce as large a tonnage as economically possible. Careful study was given to the possibilities of enlarging the shaft and revamping the bottom so as to bring the production up to 4,000 to 4,500 tons daily. The fact that it would be impossible to extend the bottom under the water-bearing gravel to the east of the shaft without great expense, and the impossibility of disturbing the very limited shaft pillars without serious consequence, practically limited any revamping of the bottom to the use of the old entries as they existed. Study of the problem indicated that the most satisfactory solution would be to abandon the hoist and shaft, and dump the mine cars on the bottom, drive a new rock slope and bring the coal and mine rock out on a belt conveyor to the screening plant over the railroad loading tracks.

It was further decided to replace the small wooden cars with as large an all-steel car as practical. As all gathering is done with mules, the capacity of the car was limited to a gross load of not over 5 tons. Hand loading is used, the mine cars are surcharged about 12 in., and the average net load of coal is 3 tons. The general dimensions of the car are: Width over all, 5 ft. 6 in.; length over all, 10 ft. 7 in.; height above rail, 30 in.; wheel base, 30 in.; gauge, 42 in.; and weight, 3,400 pounds. The bottom of the body is recessed for the wheels and is 9 in. above the top of the rails. This gives the desirable features of maximum capacity and a very low center of gravity. An unusual feature of these cars is that they are probably the only cars operated in the state of Illinois that are equipped with brakes. A novel method of holding these cars in the trip feeder and rotary dump was suggested, and consists of a steel casting riveted to the under side of the car in the center between the wheels, having straight ends for engaging the pusher and retarder dogs of the trip feeder, and flanged sides that run into holding angles in the rotary dump. The all-steel mine cars were designed jointly by the Watt Car & Wheel Co., American Car & Foundry Co., and the mining company, and each of the manufacturing companies built 200 cars.

A reversible trip feeder is used for handling the trips of loaded mine cars, and it is of the endless chain type, 3-car lengths long, placed immediately ahead of the rotary dump. The chain is fitted with gravity tilting dogs, supported in



SECTION THRU CONVEYOR GALLERY
SHOWING ARRANGEMENT OF BELT AND DRIVE

roller carriages running in angle guides. The trip feeder is driven through gear reduction to a 50-hp. reversing motor fitted with a solenoid brake and push-button control with limit switch spacing single cars in the rotary dump. As the grade of the mine-car track is about 1.6 percent, the cars always find their position in the trip feeder bumper to bumper. Swivel couplings on the cars provide for the complete revolution made in dumping the mine cars in the rotary.

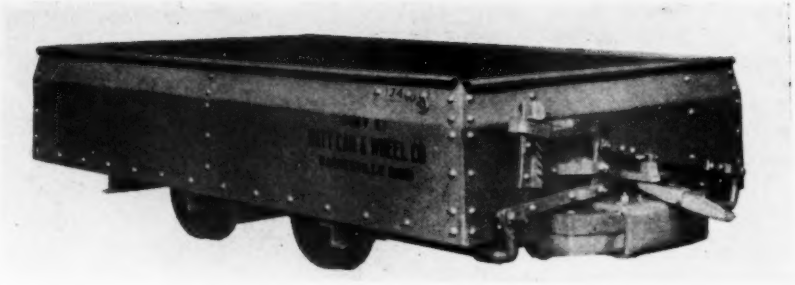
The single-car rotary dump is made up of cast-steel end rings machined 9 ft. diameter and supported in a pair of cast-steel grooved trunnions at each end, and is driven through a solenoid operated disc clutch and reduction gear from a 15-hp. motor. Mechanical stops provide for the locking of the dump in position to receive the next loaded car at the end of its dumping cycle, and push-button control takes care of its operations.

The dump shield and hopper under the rotary dump is fitted with a motor controlled by pass gate for diverting cars of rock into a rock bin. This arrangement permits cars of rock to be mixed up in the trip of loads at any point and its disposition taken care of through this motor-controlled gate. The coal from the rotary dump goes direct to a weigh box suspended from a 10-ton capacity suspension type scale, then discharged through a solenoid controlled two-way bottom gate to an 8-ft. wide shaker feeder or by-passing the feeder into an inspection chute.

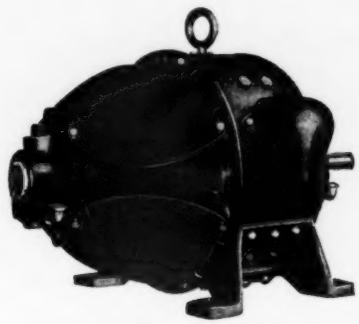
The coal from the shaker feeder is fed to the main belt slope conveyor through an apron conveyor, which also forms part of the inspection conveying system and the rock-carrying system from the rock bin when the rock is taken to the outside.

Any car of coal discharged into the weigh hopper can be by-passed by this two-way drop-bottom door of the weigh box, for inspection purposes, to the rock conveyor by the weighman releasing the gate to discharge the coal into the inspection chute. If it is found that dirty coal has been loaded, this can be traced back to where and by whom it was loaded and the amount of impurity picked out on the rock conveyor, which forms a picking table for this service. After this is done the balance of the coal continues on and meets with the regular coal discharged from the shaker feeder to the main slope conveyor.

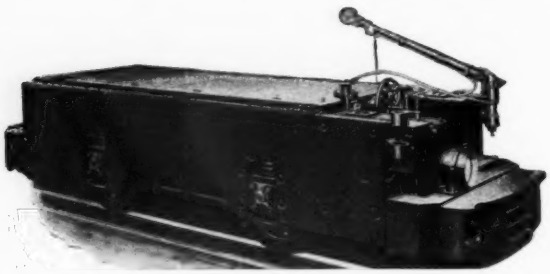
The rock from the rock bin is taken out through a reciprocating feeder and by the rock conveyors previously mentioned to the main slope belt conveyor. This mine rock is loaded out at convenient times during the day's run when coal is not available immediately at the rotary dump. The signal system from the bottom to the top warns the top man that rock will come immediately after the coal, and this man is then on the lookout and will throw a by-pass gate immediately after the coal has been discharged over the head pulley, when a space of about 25 ft. on the belt will give the operator sufficient room to open the by-pass gate for diverting the rock into the



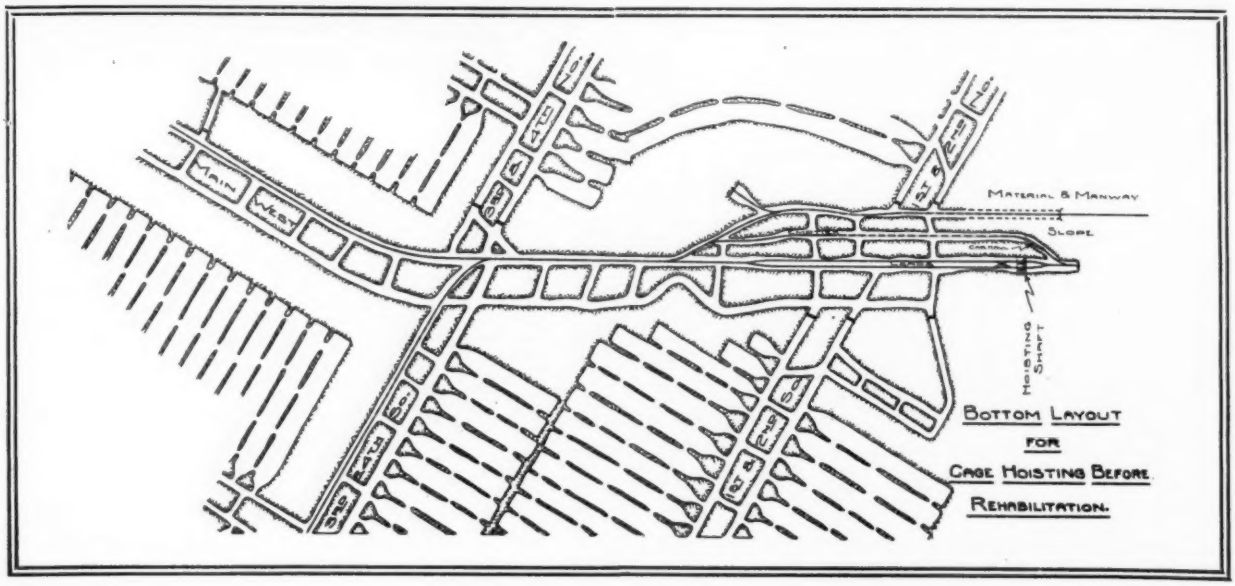
Type of car built by the Watt Car & Wheel Company for the Crescent Mining Company



Westinghouse 50hp. SK motor used by Crescent Mining Company



Goodman 15-ton Main Haulage Locomotive



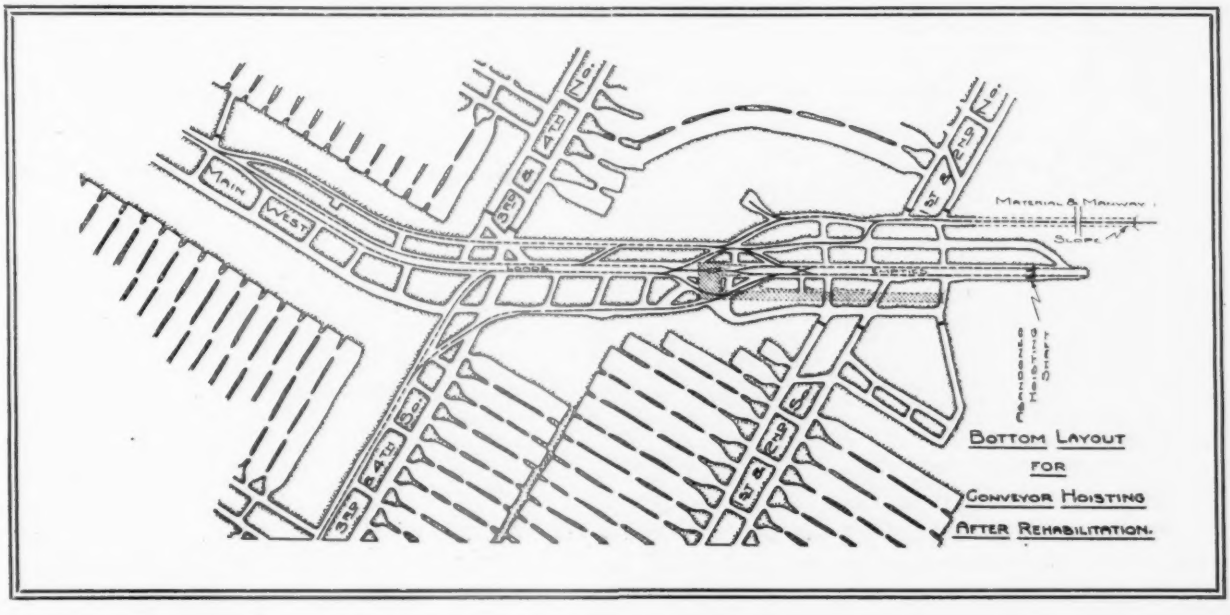
25-hp. "Caterpillar" Tractor with Willamette Double Drum Winch and Sauerman dragline bucket loading red dog for building Crescent Mining Company roads

rock bin on the outside, from which it is disposed of through the rock-disposal system.

The main-slope belt conveyor is 48 in. wide and 404 ft. centers inclined 18° from the horizontal. The belt runs 350 ft. per minute on antifriction bearing idlers spaced 4 ft. centers, approximately. A 125-hp. motor drives the conveyor through a silent chain drive and reduction gearing to a Hugger-type drive using a 60-in. diameter drive pulley and a 48-in. wide endless Hugger belt. Automatic gravity take-up is provided in a weighted take-up carriage immediately after the Hugger drive.

The discharge of the main-slope belt conveyor is made to a 60-in. wide horizontal picking table and inspection belt conveyor about 29 ft. long, which in turn discharges the coal to the shaker screens. This 60-in. wide picking table and inspection belt conveyor also runs on antifriction bearing idlers of the picking-table type, and at a speed of 150 ft. per minute, through a silent chain drive from

(*Continued on page* 27)



Safe and Economical Installation of Electric Cables in Mine Shafts

by **A. C. Butterworth***

THE INSTALLATION of electric cables in mine shafts has become so common in the iron mines of the Lake Superior District that we are inclined to forget some of the questions and doubts naturally arising in the minds of those not acquainted with the actual problem. It is the purpose of this article to point out some of the conditions governing safe and economical methods of installing these cables. There is no standard procedure, and it is quite probable that methods other than outlined below have been developed and used efficiently by other operators, either in this district or elsewhere.

The installation of cables in bore holes, which has been successfully developed in the coal fields, has not been used in the iron mines for several reasons. In general, the ore bodies are at much greater depth than the coal deposits, they extend to depth vertically rather than being spread out horizontally, the center of load distribution underground is frequently the shaft station or adjacent pump station, and the mine shaft itself is generally designed to provide ample space for the installation of pipe lines and electric cables.

Cables for installation in mine shafts will vary considerably in numbers and sizes of conductors, voltage requirements, types of construction, weights, and lengths to be handled. Three-conductor cables would probably be not less than No. 6 B. & S. nor more than 500,000 c. m., with 600 v. insulation for 220/440 v. service or 5,000 v. insulation for 2,300/4,000 v. service. Tramming cables with 600 v. insulation for 275 v. d. c. may be single conductor, concentric, or regular two-conductor cables, and will vary in size from 250,000 c. m. to 1,000,000 c. m. Signal and telephone cables may be regular or twisted pair construction, varying in size from No. 19 B. & S. to No. 10 B. & S. or even larger, and from 7 to 20 or more conductors, and generally insulated for nominal 600 v. service.

Paper insulation is not used except possibly in a few telephone cables. Varnished cambric has been used extensively and has generally given good service in initial installations. Both paper and varnished cambric require a lead sheath for protection against moisture. Rubber insulated cables are being used in most new installations at present, frequently without a lead sheath. The use of a proper type of rubber insulation, even for the 5,000 v. cables, permits the elimination of the lead sheath with a material reduction in diameter and total weight, and at a price which compares favorably with varnished cambric lead-covered cables. The additional current-carrying capacity of varnished cambric cables is not important in the conductor sizes usually encountered, as additional copper would generally weigh and cost much less than the lead sheath necessary with varnished cambric. The chances of injury to the cable during installation or removal, either due to rough handling or cold weather, seem to be greater for varnished cambric than for rubber insulated cables.

With the exception of a few installations of the rubber-jacketed type of cable in mines where extreme acid-water conditions exist, practically all shaft cables are protected by a spirally wound galvanized steel wire armoring which takes the weight of the cable as well as protecting it from injury during installation and in service. Protection of steel wire armored cables against acid water may be provided by coating the armor wires with lead during the manufacture of the cable. Tarred jute serving outside the armoring has been used quite extensively in the past as an additional protection against corrosion, but at present the tendency for shaft cables seems to be away from the use of jute on the outside of the cable on account of the unsightly appearance in case of rough handling and the very definite fire hazard due to the inflammable character of the tarred jute. Ordinarily the corrosion of the armor wires of shaft cables is comparatively negligible, although some instances of rather rapid deterioration have been encountered. The shaft water should be checked for acidity, and if strongly acid the cable should be provided with lead-coated armoring or the rubber-jacketed type of construction should be used as noted above. The normal life of a shaft cable is more or less indefinite, depending on mining conditions, but some cables installed 15 to 20 years ago are still giving satisfactory service in their original installation, and several cables have been removed from original locations and reinstalled in other shafts as the mining picture has changed.

Weights of shaft cables will vary from 3 to 12 pounds per foot, or even more, depending on size and construction, and the lengths to be handled will vary from short pieces of a hundred feet or so up to possibly 3,000 ft. The limit in length would probably be determined by the size of the cable reel that could be shipped, and the writer can recall no case in which it was necessary to splice cables in the shaft on account of inability of the cable manufacturer to supply the required length of cable.

MINE SHAFTS VARY in many details in design and construction, as well as in material through which they are sunk and amount of water encountered. They may be vertical or inclined, designed for one, two, three, or four hoisting compartments, of steel or timber construction, lined with reinforced concrete, wood planking, concrete planking, or cut out of solid rock with no lining at all. In several instances portions of mine shafts pass through ground that is gradually moving, and it is necessary periodically to realign the shaft bodily. In the case of inclined shafts, the cable compartment may be above or below the hoisting compartment, or between compartments or at the end of the shaft section. Steel shaft sets are generally spaced farther apart than timber sets, and may be as much as 7 or 8 ft. apart in exceptionally good ground. The cables and pipes may be carried in same compartment as the ladder way, or a separate compartment may be provided.

Available equipment which could be utilized may affect the installation of cables in shafts. Single or double drum skip hoists or cage hoists, or both, with or without clutched drums, sinking hoists, temporary installations specially made for handling cable, the use of tractors, teams, block and tackle or chain blocks, all may influence the method used in any particular case. It is desirable, but not absolutely essential, that the equipment used in lowering the cable have the necessary power to hoist the entire length if difficulties are encountered. Safety in installation in any case demands absolute control of brakes and ability to stop and hold the load within inches if necessary.

Safe and economical installation of electric cables in mine shafts starts with the design of the cable itself. Although

* Electrical engineer, Pickands, Mather & Co.

not many shaft cables are installed to take their entire weight from one support at the top, every shaft cable may at some time or another, either during installation or removal, be called upon to take its own weight. This is not a serious question with the shorter lengths and lighter cables, but as lengths and weights increase care should be taken in the design of the cable that the insulated conductors are properly cushioned against compression due to the armor wires tightening under strain, and that the tensile strength of the armoring provides an adequate safety factor over the total net weight to be handled. A minimum safety factor of five is recommended, but safe installations have been made with a factor of four or even less. In case of excessive weight it may be desirable to have the cable constructed with wire servings around the armoring at close intervals, say every 2 or 3 ft., in order to retain the armoring in shape and prevent twisting of the cable. In case the method chosen for installation calls for supporting the entire cable from one end while installing, the cable manufacturer should be instructed to extend the armor wires a sufficient distance beyond the end of the conductors so that the hoisting cable may be properly clamped to the armor without injury to the electric cable itself.

GIVEN A CABLE of the proper design, the next step is proper planning and adequate preparation. Most shaft cables are supported by suitable clamps to the shaft sets at intervals, depending on installation conditions. Assuming a vertical shaft with steel sets in good permanent ground, the proper spacing should be such that each clamp will be able to carry the weight of its own section with a reasonable safety factor and without undue squeezing of the cable. This may require clamps at every 20 ft. for a given type and weight of cable and design of clamp, while 100 ft. may be satisfactory for another condition. In general, however, the spacing should preferably be kept to not over 50 or 60 ft. on account of the possibility of slack due to stretching of the cable and also the chance of a broken or dislodged clamp. In a shaft with timber sets instead of steel sets, the clamps should be spaced at closer intervals on account of the more frequent occasion for shaft repair work and the possibility of cable clamps not being properly reinstalled immediately. In the case of an inclined shaft, clamps should be spaced closer than in vertical shafts in order to reduce the sag between supports.

The design of the clamps will vary with the requirements and the past experience and personal preferences of the designer. They may be of cast iron or steel, with smooth or corrugated cable grooves, or treated wood blocks with the cable openings bored to exact size and then sawn in two with an extra wide cut to allow for compression, or they may be made of strap iron bent to the proper shape. The clamps may be bolted or fastened with lag screws directly to the shaft sets, or they may be arranged to be hung from the sets with straps or rods. Whatever their design, they should take the weight of the cable without a tendency to kink it, and should have sufficient contact area and clearance between halves to grip the cable securely without crushing.

THE INSTALLATION of most shaft cables comes at a time when the shaft is already operating, either in development or production, so that the actual cable installation must be planned for a time which will dovetail in with other operations. Immediately prior to the installation, the cable compartment in the shaft should be inspected from top to bottom, to make sure that there are no obstructions such as temporary platforms, etc., to be removed. If possible, a straight course should be selected for the cable to follow from top to bottom, so located in the cable compartment that it will have the maximum protection from danger of falling chunks. Time in actual installation can be saved, if at this time the cable clamps are distributed throughout the shaft at the proper intervals and fastened to prevent accidental dislodgement. In case the cable compartment is also the ladder way, it may be necessary to cut holes in the sollars or platforms to permit the cable to pass through. Cable will naturally pass vertically through a vertical shaft, but in inclined shafts it will be necessary to provide a sled or shoe made of plank with the ends beveled, to carry the end of the cable as it passes over the shaft sets. Additional shoes may be found necessary for intermediate clamps, if used.

In lowering the cable, the lower end should be followed down the shaft, either by climbing down the ladder way or by riding the skip or the bonnet of the cage. Men should be stationed through the shaft at intervals of 200 to 300 ft. to guard against blockage and help the cable through tight places. An adequate system of signalling must be arranged for beforehand to prevent the cable piling up if it gets blocked at any obstruction. Signal stations should be located at reasonably close intervals to prevent signals being misunderstood. For quiet shafts the time-honored signal system of rapping a bar against the air line may be satisfactory, but the closer the contact between various parts of the shaft and the engine house, the better the chances of getting the cable down without trouble and delay. Careful thought and planning of the signal system will be found to have been well spent when the cable is finally in place, and if the shaft provides a means of continuous communication from top to bottom, the worries of the foreman are over before they have begun.

ONE METHOD frequently used in lowering a cable is to wind the electric cable on the drum of the skip hoist and then pay it out down the shaft in the cable compartment. In the case of a double-drum hoist with one or both drums clutched to the drum shaft, this is probably the easiest and quickest way of handling moderate to long lengths of cable. It requires that the diameter of both the head sheave and drum be great enough so that the cable will not be damaged by the combined bending and tension due to its weight. Diameters of 10 to 12 ft. should be satisfactory for the cable sizes generally encountered, but diameters of 6 ft. or less would be questionable with the larger and heavier cables. If the electric cable is larger in diameter than the hoisting cable, as is generally the case, the groove in the head sheave and any turn sheaves must be filled with rope or hemp to prevent wedging and crushing of the electric cable. When this method of installation is used, it is preferable to have the armoring served at intervals as noted previously, to keep the cable round, and having the cable made up with the armor wires extended 20 ft. or more beyond the conductors will permit more secure clamping to the hoisting cable. The reel should be set up as close to the shaft collar as practical, with arrangements for adequate braking of the reel to avoid excessive slack accumulating while the cable is being pulled up over the head sheave and wound on the drum. The skip should be blocked with timbers at the shaft collar, the hoisting cable disconnected and clamped to the electric cable, and the cable wound carefully on the drum until the reel is empty. Ordinarily the weight of the electric cable hanging from the head sheave to the shaft collar will be great enough to overcome the sag between idler stands, but precautions should be taken to hold the lower end in case its own weight is insufficient. Care should be taken to disconnect any geared limit switches or safety devices while this is being done, marking them carefully so that the original settings can be duplicated after the cable is installed.

A deflecting sheave should be set up either at the shaft collar or in the head frame to deflect the cable from the center line of the skip compartment over to the proper location in the cable compartment, and the cable should be lowered over this sheave. If a sheave is not available, a suitable timber shoe or slide can be used, but sharp bends and pinching of the cable must be guarded against. It must also be remembered that as the cable approaches its final position the horizontal pressure against this sheave or shoe increases, and the deflector must be securely anchored or blocked.

Lowering the cable by this method may result in considerable elongation. A 3 percent elongation means 60 ft. additional cable in a 2,000-ft. length. If the signal system is satisfactory and the hoist control is accurate, clamping should start at the lower end after the cable has reached its final depth, and as additional clamps are applied on the way up, the strain can be released gradually so that each clamp would carry only the weight of its own section of cable. However, if control is coarse, or the signal system inadequate, there would be the danger of slack accumulating by lowering too far, or excessive tension or kinking of the cable in pulling up the slack. For this condition it would be better to start clamping from the top down, and let the tension remain in the cable. After the cable is clamped in place in the shaft, the upper portion still remaining above the shaft collar can be lowered and coiled, or laid out for its permanent connection to the power or signal system. Frequently cables are installed in one continuous length from the engine house to the pump station, the portion on surface being pulled through fibre ducts, or laid in a concrete or plank trench, or supported on racks in a cable and pipe tunnel between the shaft and the engine house. Whether run in one continuous length or spliced at the collar, all cables entering the shaft should be securely clamped over an approach curve of sufficient radius to prevent sharp bends in the cable in case of later strain due to broken or slipping clamps in the shaft.

AS STATED ABOVE, this method of handling the cable while lowering is particularly adapted to medium or long cables where a double-drum clutched skip hoist is available. If the drums are not clutched, or in case of single drums used with balanced skips, the other hoisting cable will have to be taken off the drum while the electric cable is being installed. Lack of time or the cost of this additional work may affect the method used, and make it desirable to lower the cable directly from the reel at the collar without winding it on the hoist drum.

In lowering the cable direct from the reel, some of the preliminary steps are identical with the first method. The skip is blocked at the collar and disconnected, the deflecting sheave or shoe is installed, and the cable reel is set up as before. In setting up the reel, however, even greater care must be taken to anchor it against slipping and to provide an adequate braking arrangement. Although this method does not depend on holding the weight of the cable in the shaft with the brakes on the reel, they may be called on to stop and hold the weight of 100 ft. or more while the cable is being lowered. The reel should be set up to pay the cable off from the top of the reel, instead of the bottom as in the first case, and the brakes can consist of suitable timbers or planks bearing against the reel flanges from above, with sufficient leverage to be safe and at the same time quickly applied and released. A suitable curved block should be securely fastened at the edge of the cable compartment to prevent too sharp a bend in the cable if the reel brakes have to take any of the cable weight.

The hoisting cable is lowered over the deflecting sheave into the cable compartment, and the lower end of the electric cable is clamped to it with clamps provided beforehand. These clamps may be of wood or steel, and are used in this manner only during the actual lowering of the cable. A satisfactory clamp which has been used for this method where small clearances did not affect the design consisted of two pieces of 2-in. x ¼-in. strap, formed in quantities under the steam hammer with two grooves in each piece, of the proper radius to take the two cables, and with holes for bolts between and outside of the cables. These clamps were also used as the permanent clamps by transferring them from the hoisting cable to strap-iron hangers bent to the proper shape to hang over the top edge of the vertical flange of the shaft set steel, so that the cable would be held against the flange when supported by the clamp. Treated wooden blocks have also been used in the same manner. Clamps such as the Crosby wire rope clamp or others where the pressure is concentrated have been used for this purpose, but their use is not recommended on account of possible damage to the electric cable. Of course, when the cable is in its final position, the lower end must be long enough to extend to the pump house or other terminal position. If the hoisting cable is not long enough, or if the other skip would be pulled into the head sheave before this position is reached, it will be necessary to lower the electric cable a sufficient amount to make up the difference before clamping it to the end of the hoisting cable. Ordinarily the brakes on the reel will hold this with safety, but double precautions should be taken to prevent the cable unreeling and falling down the shaft.

THE HOISTING CABLE and electric cable are lowered simultaneously and clamped together at intervals of 20 to 50 ft., depending on the type of clamp and weight of cable. Care must be taken not to tighten the clamps enough to crush the cable, and yet tight enough to hold. Twisting of the two cables around each other should also be guarded against by the men following the cable down the shaft. This method of lowering is somewhat slower than the first, but is generally considered safer. Since the weight is uniformly distributed along the hoisting cable, there is practically no elongation of the electric cable, and since the second rope and skip are not disconnected from the drum, the control of the hoist, especially at greater depths, is better due to the counterbalancing effect of the second skip. The additional clearance required while lowering the cable due to the two parallel cables and clamps at intervals is generally not a serious matter, but in extreme cases the first method, or some adaptation of it, may be necessary on this account. It might even work out best to station a man at some particularly tight place in the shaft to remove clamps as they come down and reclamp when the cables have passed below the obstruction. When the cable is finally lowered, the temporary clamps at the lower end are removed and the electric cable permanently clamped to the shaft sets. As the work progresses toward the top, the removal of the load from the hoisting cable may tend to put tension in the electric cable already in place, but generally there is sufficient slack in the electric cable between temporary clamps to compensate for this slight elongation. This must be watched, however, and if the strain becomes excessive it should be relieved by carefully lowering the hoisting cable slightly. If preferred, the process may be reversed and the cable clamped from the top down.

In both of the foregoing methods, the writer has assumed that a cage hoist was available at the same shaft to expedite the handling of men and material. If only one hoist is located at a given shaft, it may be necessary to install a small hoist temporarily to handle the cable, retaining the shaft hoist to handle men. In this case the strength of the hoist brakes and cable, and the anchoring of the hoist, should be carefully checked before installation, not after something has broken and the power cable has piled up in the bottom of the shaft. The method used would probably be to clamp the electric cable to the hoisting cable at intervals while being lowered, but surface conditions may make it necessary or desirable to unreel the cable on surface and lower it over a suitable sheave or deflector at the collar with the hoisting cable clamped to the upper end. This method will require power to drag the cable along the ground until the weight of cable hanging in the shaft is sufficient to overcome friction. If a suitable hoist is not available, a tractor or teams, or even block and tackle, may be used, depending on the length and weight of cable to be handled. Whatever the method, the principal requirements are reserve power for holding the cable, sufficient men and adequate signal system to control the lowering operation, and the elimination of crushing and sharp bends and kinks in the cable.

IN THE FOREGOING CASES, the cables have extended from the surface down into the mine. It is sometimes necessary to make extensions from an existing level to a lower or higher level. These extensions are generally comparatively short, and in most cases can be furnished on reels of such dimensions as can be handled in the cage or hung bodily beneath the skip and lowered to the required level. In such a case the reel would be set up in the shaft station, the end of the cable securely fastened to the under side of the skip or cage, and hoisted slowly from the reel until the cable hangs free in the shaft. The lower end would then be deflected into the cable compartment over a suitable block or sheave, and carefully lowered until the final position is reached, and the cable permanently clamped in place. If the length of the extension is greater than the distance from the upper level to the surface, so that the cage or skip would be hoisted into the head sheave before the cable could be unreeled, or if the cable reel should be too large to be lowered in the shaft, one of the preceding methods must be used, lowering the cable from surface. In this case time would be saved by lowering the cable down the hoisting compartment until the lower end is opposite the final position of the upper end, then deflecting into the cable compartment and lowering to the final position for clamping.

Mine shafts sometimes extend through moving ground, and frequent repairs may make it undesirable to support the cable from the shaft sets. In such cases the cable may be supported for a part or all of its length by an arrangement similar to the bore-hole clamps used elsewhere, with an adjustable mounting at the collar of the shaft to compensate for shaft movement. Another satisfactory method is to hang a steel hoisting cable from a suitable support at the collar, and clamp the electric cables to it at frequent intervals. In this case the strength of the steel cable should be ample, and its corrosion should be watched after installation.

The installation of rubber-jacketed cables has not yet become common for this class of service, but experience with this type of construction for other conditions indicates its entire feasibility for use in shafts with acid water. In general, the weights are much less and the costs are higher for this type than for the wire armored cables. Particular caution should be taken in the design and manufacture of the cable to eliminate the chance of the conductors slipping out lengthwise from the jacket, and to provide an adequate static shield. Greater care should be taken in clamping the cable, and the spacing of the clamps should be somewhat closer than with the regular type of cable. Except for short lengths, cable of this type should not be hung entirely from one end, but should be supported by clamping to a strain cable at intervals while lowering. One disadvantage of this type is its lack of mechanical protection after installation, and the chance of its being cut with an ax, or having a spike driven into it during shaft repair work is much greater. However, its corrosion—and acid—resistant properties may overbalance its other disadvantages.

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NEWS
of the mining field

Personals—

EUGENE McAULIFFE, president, Union Pacific Coal Company, was a visitor in Washington, the week of October 17.

STANLEY A. EASTON, has been appointed a member of Alfred P. Sloan's committee, appointed by the President to consider our international debt situation.

J. F. CALLBREATH, secretary, the American Mining Congress, was a Chicago visitor during the month. He spoke before the local section of the A. I. M. E. at Columbus, Ohio, October 28.

GEORGE B. HARRINGTON, president, Chicago, Wilmington & Franklin Coal Company, spent several days in Philadelphia, and eastern points, on matters of interest to his company. He recently accepted appointment as national chairman of the coal trade division of the Hoover-Curtis campaign committee.

HERBERT H. TAYLOR, president, Franklin County Coal Company, captured the senior golf championship for all classes, at the tournament of the Illinois Seniors' Golf Association. Mr. Taylor distinguished the golf tournament of the Cincinnati convention of the Coal Division, of the American Mining Congress, last May by making a hole in one.

ARCHIBALD DOUGLAS, United Verde Extension Mining Company, and prominent New York attorney, has returned to the United States from an extended European trip.

H. DEWITT SMITH, has returned to the United States after a trip to Colombia, where he has been inspecting gold properties.

W. J. LORING, has opened an office in the Quinby Building, Los Angeles, Calif., where he will specialize in mining engineering, management and finance of gold mines.

HARVEU LE FEVRE, formerly sales manager of the H. K. Porter Company, of Pittsburgh, has joined the forces of the Heisler Locomotive Works, Erie, Pa.

ROBERT SHERWOOD, Central Indiana Coal Company, was a Washington visitor during late October.

C. A. CABELL, president, Carbon Fuel Company, was reelected president of the Kanawha Coal Operators Association at their annual meeting held in October.

HORACE ANDREWS, JOHN B. PUTNAM, JOHN A. HADDEN and **HAROLD H. BURTON** announce the formation of a partnership for the general practice of law, under the name of Andrews, Hadden and Burton, Union Trust Building, Cleveland, Ohio. Mr. Putnam is associated with Pickands, Mather & Company, which affiliation he will continue.

PROF. C. R. FORBES, head of the Mining Department, Missouri School of Mines, has been granted a year's leave of absence, and will develop a gold mining property at Dos Cabezos, Ariz.

J. H. STEINMESCH, formerly with the St. Joseph Lead Company, has been appointed to Professor Forbes place during his temporary absence from the Missouri School of Mines.

THE COAL DIVISION Anthracite Section of the American Institute of Mining Engineers was held at Hazelton, Pa., October 14-15. Many interesting papers were presented to a large and interested audience.

CHARLES E. DUNLAP, president, Berwind-White Coal Mining Company, is in Europe and will return to this country the latter part of November.

CHARLES E. STUART, president, Stuart, James & Cooke, Inc., recently gave a dinner in honor of Sir Ernest Simons, member of the British Parliament. Many important coal operators attended, and the topic for discussion was "World Economics."

PAUL WEIR, vice president, Bell & Zoller Coal and Mining Company, and Reamy Joyce, president, Joyce-Watkins Company, recently spent a week's vacation in the Tennessee Mountains.

A. E. BENDELARI, president, Eagle Picher Lead Company, has just completed a trip to Picher, Okla., where with other officials of the company, they watched operation at their new ore concentration mill, which was recently put into operation. The mill is the largest concentrating plant in the country and replaces 15 small units. It is designed to handle 800 tons an hour, and cost approximately $500,000.

Arrangements are now under way for the annual meeting of the Colorado Mining Association and the Colorado Chapter of the American Mining Congress, held at Denver, usually in January. The final function of the convention is usually the sowbelly dinner. It usually furnishes the fun of the convention. Every year there is a new committee of arrangements, which tries to outdo its predecessor in planning out unusual stunts. The menu of the sowbelly dinner consists primarily of sowbelly and beans, old Cornish pastry and those things usually prepared by the early prospectors as their regular menu. Sometimes tin plates and cups are used instead of dishes. The main dining room is decorated and lighted in primitive manner. These sowbelly dinners are always well attended.

The Greater Pennsylvania Council has issued Soft Coal Bulletin No. 1, entitled "The Decline of the Bituminous Coal Industry in Pennsylvania." The Council is impelled by a desire to remedy the disastrous results which the decrease in the bituminous coal industry in that State has brought to its citizens. The preface of Bulletin No. 1 states: "Coal is suffering from the keen competition of fuel oil, natural gas, and hydroelectric power. This competition has reduced coal share of the total energy supply by 30 percent since 1905. Oil has been coal's greatest competitor. Further losses through oil are not expected, but a further loss of market in natural gas is probable. The market for coal has also been reduced by increased efficiency in the use of fuel. Further economies in coal burning are anticipated. Sixty-five thousand Pennsylvania miners lost their jobs between 1923 and 1930. Total production of bituminous coal in the United States declined 195,000,000 tons from 1926 to 1931. Pennsylvania's output dropped from 172,000,000 tons in 1923 to 97,000,000 tons in 1931, the first year since 1904 in which the State's production fell below 100,000,000 tons. Pennsylvania's share in the total output declined from 36 percent in 1912 to 26 percent in 1931. Among the soft-coal States, West Virginia, Virginia, and Kentucky alone increased their output during 1927-1931 over that during 1912-1916. West Virginia is now the leading soft-coal-producing State. Soft-coal shipments to tidewater, lake cargo, and central freight association markets have been shifting for 20 years from northern to southern mines and railroads, with disastrous results for Pennsylvania operators, miners, and carriers."

The bulletin states the value of products of the bituminous coal industry in Pennsylvania for the year 1923 as $453,003,200; and in 1930, $209,274,300. Under the caption "Effect on Labor" the bulletin says: "Technological improvements in the process of producing coal, the growing competition of substitute fuels, wage reductions, part-time work, and the persistence of the depression have combined to reduce soft-coal miners to a condition which requires immediate relief measures and planning for the improvement of labor standards. The social results of their economic condition—strikes, evictions, degraded living conditions, riots, and unrest—are too familiar to necessitate repetition here."

The Bureau of Mines issued a bulletin outlining the procedure in testing, the fees charged, and the requirements for its approval of miscellaneous portable and semi-portable electric mine lamps.

The bureau has also issued the following reports: management of labor in successful metal-mine operations; safety organizations at Lake Superior iron mines; results of a magnetic study of iron deposits in districts east of the Mississippi River; oil prospecting by resistivity methods in Kentucky; smelting in the lead blast furnace, covering preparation of the charge; and statistics of metal production in Utah in 1931.

The Nevada Bureau of Mines issued reports on a recent gold discovery near Summit Springs, in Mineral County, Nev.; and on the possibility of electrochemical industries at the Hoover power dam across the Colorado River.

A report has been issued by the Canadian Department of Mines on tests of British Columbia coals when used as pulverized fuel.

Gen. Brice P. Disque, executive director of the Anthracite Institute, in an address before the Scranton Chamber of Commerce, said that he attributed the decline in anthracite tonnages to cheaper fuels, the inroads of the so-called "convenience fuels," and importations of foreign anthracite mined by cheap European labor. "We know why we have lost, and we must, and will, take steps to preserve the industry." Among the needs of the situation, he said, was a price level that would bring the safety, health, and cleanliness superiority of anthracite within reach of householders who for economic reasons have reluctantly turned to cheaper substitutes. Substantial conversion of the industry's activities in the direction of automatic heat with anthracite, for which the resources of the Institute are now prepared, was a further requirement, he said.

"The men of this region who can see what they look at, from the man below the ground to the one who pays his wages; from the manager of transportation to the merchant who exists upon the community's wages—all who unflinchingly face facts—recognize that readjustment is the responsibility not of one man or group of men, but of every individual whose destiny is even remotely touched by the movement of anthracite.

"Anthracite has not suffered because of the appearance of any better fuel. It stands today the finest, cleanest, healthiest fuel available for domestic heating. It will be made available to the millions of families who can not afford it now, who would like to have it, and who will purchase it when the price is made right and the facilities for its use are modernized."

The Institute of Makers of Explosives reports that during the first six months of 1932 there was a decrease of 53 1-3 percent in blasting cap accidents to children as compared with the number reported during the same period of 1931.

Briefs have been received by the Interstate Commerce Commission in its long-pending investigation of the freight rate structure on non-ferrous metal rates. The next step will be the preparation for the commission by the examiner in the case of his conclusions and recommendations after which the case will be assigned for argument before the commission.

The Department of the Interior, in reporting on the Montana coal fields, says:

"The Ashland coal field embraces an area of almost 1,000 square miles in southeastern Montana. The geology and coal resources of this field are described in a report recently issued by the United States Geological Survey, Bulletin 831-B.

"The coal resources of the Ashland field are estimated at about 10,750,000,000 tons. Numerous townships contain five to eight coal beds with average thickness greater than 6 ft. Outcrops of coal beds 10 ft. thick are common, and beds 20 to 25 ft. thick occur in several localities and are continuous with these thicknesses throughout areas of several square miles. The coal is of subbituminous rank, is fairly brittle, breaks with a conchoidal fracture, and slacks when exposed to the atmosphere. At present there are no railroads in this field, and consequently mining operations are small. Mining on a commercial scale will be feasible when proper transportation facilities are available."

In handing down the decision in the case of Appalachian Coals, Inc., the court said:

"We sympathize with the plight of those engaged in the coal industry, whether as operators or as miners, but we have no option but to declare the law as we find it. We can not repeal acts of Congress, nor can we overrule decisions of the Supreme Court interpreting them.

"If it be thought that the law should permit agreements eliminating competition as between the parties thereto and fixing as between them prices at which goods shall be sold, in cases where monopolistic control of the market is not intended and does not result, the remedy is with Congress and not with the courts."

Leading metallurgists of the country will gather in Pittsburgh on Friday, October 28, to hear and discuss reports on studies in steel research undertaken at the Carnegie Institute of Technology. The occasion is the sixth annual open meeting of the metallurgical advisory board to that institution.

Importers of manganese ore and iron and steel products are subject to new regulations from F. X. A. Eble, customs commissioner. This action was announced at the same time a letter from President Hoover to Chairman O'Brien, of the Tariff Commission urged the investigation of certain tariff schedules affected by depreciated currencies in foreign countries. The letter asked for recommendations in case the investigation disclosed that the cost of production had altered the basis of tariff duties. Currencies in 30 countries, it was observed, have depreciated from 5 to 55 percent which has reduced the living standards in those countries and widened the difference between production costs in the United States and those countries. The order will compel the importers of manganese to give a redelivery bond, in case a finding of dumping is entered later. Channels and bars from Germany are also subject to bond under the anti-dumping provision of the law.

The *Bethlehem Review*, published by the Bethlehem Steel Corporation, says:

"The steel industry of the United States in the first half of 1932 suffered a deficit of $61,000,000, according to a Dow-Jones compilation.

"Property taxes were equivalent to approximately one-third of this loss. The worker's pocketbook has likewise suffered acutely. Some authorities estimate that 33 cents out of every dollar in the workers' pay envelope goes for taxes. The worker often does not realize that he is being taxed, because he may not pay the tax directly.

"But there is a concealed tax in every bill that he pays, every purchase that he makes. If the worker rents his house, the owner must pay taxes, and those taxes are figured in the cost of the rent.

"The stores which sell food and clothing must pay taxes on their property, and those taxes are reflected in the cost of food and clothing.

"Whether the wage earner pays its tax directly or not, it is levied upon him, upon every citizen, in the cost of the services or things which one buys."

Although total exports of electrical goods from the United States in the first half of the current year were far behind the corresponding period of 1931, sales of this class of equipment to seven foreign markets actually registered increases, according to a study made by the Commerce Department's Electrical Equipment Division.

These increases were especially gratifying, it is pointed out, because in most cases they were accounted for by radio sets and electric refrigerators, indicating that such merchandising items are helping to take up the slack resulting from the loss of heavy equipment lines such as generators, turbines, etc.

The markets which showed increased takings in the first six months of this year with the amount of increase over the corresponding period of 1931 are: Spain, $372,300; China, $50,600; Hong Kong, $63,000; Morocco, $27,300; Greece, $19,800; Kwantung, $18,900; Netherland East Indies, $6,000.

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GOVERNMENT PUBLICATIONS

Report of Investigations 3188—
Bureau of Mines—*by H. Tomlinson.* A Study of Falls of Roof and Coal in Mines of Lincoln County, Wyo.

Report of Investigations 3192—
Bureau of Mines—*by G. W. Jones.* Investigation During 1931 of Gases in Manholes in Boston, Mass. This paper presents the results of work done under a cooperative agreement between the Bureau of Mines, the Edison Electric Illuminating Company of Boston, and the Boston Consolidated Gas Company.

Information Circular 6615—
Bureau of Mines—*by W. G. Bradley.* Methods and Costs of Mining and Crushing Gypsum at the Mine of the Blue Diamond Corporation (Ltd.), Arden, Nev.

Information Circular 6637—
Bureau of Mines—*by A. C. Fieldner and Alden H. Emery.* Research Activities in the Mineral Industries of the United States.

Information Circular 6645—
Bureau of Mines—*by R. R. Sayers.* Physiological Factors in Mine Ventilation in 1931.

Information Circular 6648—
Bureau of Mines—*by G. R. Hopkins.* Survey of Cracking Plants, January 1, 1932.

Information Circular 6651—
Bureau of Mines—*by W. R. Crane.* Abstracts of Recent Articles on Mine Support.

Information Circular 6656—
Bureau of Mines—*by Carl N. Anderson.* Mining Methods and Costs at the Interstate Zinc & Lead Company's Hartley Mine, Tri-State Zinc and Lead District.

Information Circular 6657—
Bureau of Mines—*by Oliver A. Dibble.* Clay Mining Methods and Costs at the Corunna (Mich.) Pit of the Aetna Portland Cement Company.

Information Circular 6665—
Bureau of Mines. The Significance of the Bureau of Mines Approval of Gas Masks.

Information Circular 6669—
Bureau of Mines—*by Frederick W. Lee.* Geophysical Abstracts No. XLI.

Anti-Trust Laws

On October 10, Gilbert H. Montague, of the New York Bar, addressed a conference on anti-trust laws of the Chamber of Commerce of the United States, taking as his subject "Extricating Business from the Anti-Trust Laws." He said in part: "Once more American business has been warned, on October 3, in a Federal Court decision in which three Circuit Court of Appeals judges concurred, that ruinous competition breeding unemployment and destruction of industry can not be prevented by cooperative action, unless and until Congress shall change the drastic prohibitions of our present anti-trust laws." "We sympathize of the plight of those engaged in the coal industry, whether as operators or miners," this Federal Court declared, "but we have no option but to declare the law as we find it. We can not repeal acts of Congress, nor can we overrule decisions of the Supreme Court interpreting them. If it be thought," this court continued, "that the law shall permit agreements, eliminating competition as between the parties thereto and fixing as between them prices at which goods shall be sold, in cases where monopolistic control of the market is not intended and does not result, *the remedy is with Congress and not with the courts.*" Mr. Montague quotes Justice Brandeis as saying last month, "The people of the United States are now confronted with an emergency more serious than war; many persons think that one of the major contributing causes has been unbridled competition. Increasingly, doubt is expressed whether it is economically wise, or morally right, that men should be permitted to add to the producing facilities of an industry which is already suffering from overcapacity. In justification of that doubt, men point to the excess capacity of our productive facilities resulting from their vast expansion without corresponding increase in the consumptive capacity of the people. They assert that through improved methods of manufacturing, made possible by advances in science and invention and vast accumulation of capital, our industries had become capable of producing from 30 to 100 percent more than was consumed even in days of vaunted prosperity; and that the present capacity will, for a long time, exceed the needs of business. All agree that irregularity in employment—the greatest of our evils—can not be overcome unless production and consumption are more nearly balanced." Mr. Montague says further: "Perhaps we are now at the point where immediate emergency relief may help more than any delayed legislative masterpiece . . . where a prompt temporary remedy may be a greater necessity than any postponed statutory utopia . . . where speed may be more important than absolute perfection . . . where prolonged discussion may perhaps help very little, but a very little experimentation in the liberalization of the anti-trust law may possibly help a great deal."

THE TWELFTH ANNUAL MEETING of the Copper & Brass Research Association was held October 13, 1932. Officers elected were: R. L. Agassiz, Calumet & Hecla Consolidated Copper Company, president. F. S. Chase, Chase Brass & Copper Company; Louis S. Cates, Phelps Dodge Corporation; H. Donn Keresey, Anaconda Wire & Cable Company; and C. D. Dallas, Revere Copper & Brass, Inc., vice presidents. C. T. Ulrich, Kennecott Copper Corporation, treasurer; H. Foster Bain, managing director; William A. Willis, manager; and Bertram B. Caddle, secretary.

The following were elected members of the board of directors: R. L. Agassiz, chairman, Calumet & Hecla Consolidated Copper Company; Louis S. Cates, president, Phelps Dodge Corporation; H. Donn Keresey, president, Anaconda Wire & Cable Company; C. T. Ulrich, secretary and treasurer, Kennecott Copper Corporation; Charles Hayden, vice president, Nevada Consolidated Copper Company, and Utah Copper Company; John A. Coe, president, the American Brass Company; F. S. Chase, president, Chase Brass & Copper Company; C. D. Dallas, president, Revere Copper and Brass, Inc.; J. W. Allen, treasurer, Greene Cananea Copper Company, and Inspiration Consolidated Copper Company; Charles F. Ayer, president, Magma Copper Company; Francis J. Bassett, vice president, Revere Copper and Brass, Inc.; Julian B. Beaty, Nichols Copper Company; H. C. Bellinger, vice president, Chile Exploration Company; Erle V. Daveler, treasurer, Utah Copper Company, and Nevada Consolidated Copper Company; Cleveland E. Dodge, vice president, Phelps Dodge Corporation; E. O. Goss, president, Scovill Manufacturing Company; Sam A. Lewisohn, vice president and treasurer, Miami Copper Company; William Loeb, vice president, American Smelting & Refining Company; E. T. Stannard, vice president, Braden Copper Company; Robert E. Tally, United Verde Copper Company; W. R. Webster, chairman, Bridgeport Brass Company; B. N. Zimmer, vice president, the American Metal Company, Ltd.

The Tariff Commission announces that the Hon. Charles R. Crisp, of Americus, Ga., has taken the necessary oaths which qualify him as a member of the Tariff Commission. The President appointed Judge Crisp to fill the vacancy caused by the death on September 16 of Mr. Lincoln Dixon, Democrat, of Indiana. The appointment is for the term ending June 16, 1937. This brings the Tariff Commission again to its full strength of six commissioners. These commissioners are: Robert L. O'Brien, chairman, Republican; Thomas W. Page, vice chairman, Democrat; Edgar B. Brossard, Republican; John Lee Coulter, Republican; Ira M. Ornburn, Democrat; and Charles R. Crisp, Democrat.

In the census of mines and quarries, 1929, the Bureau of the Census calls attention to the geographic distribution by iron ore mining States. Although iron ore mining was reported in 18 States for 1929, no less than 92.6 percent of the total tonnage was produced in only 3 States. Of these, Minnesota contributed 63.3 percent; Michigan, 20.6 percent; and Alabama, 8.7 percent of the total. Total quantity of iron ore produced (tons 2,240 pounds), 73,963,485; the value of this production, $196,085,542. Persons engaged in the industry in 1929 were 30,998. This indicates a reduction of 37 percent under the number employed in 1919. Open-pit mines, with slightly more than one-third as many wage earners, contributed approximately one-third more tonnage than underground mines. In the matter of power equipment the great increase for the horsepower for mines is due more to the decrease in the number of small mines than in the absolute increase in the installation of power equipment. The figures for the country as a whole show a slight increase during the recent decade in the horsepower per thousand tons of ore mined, but the average for 1929 is identical with that for 1909. The horsepower per wage earner, however, was more than twice as large in 1929 as in either 1909 or 1919. The horsepower rating for power equipment for the three years is as follows: 1929, 498,821; 1919, 370,859; 1909, 346,534. The horsepower per wage earner is, respectively, 17.5, 8.1, and 7.3 percent.

Gold, silver, copper, lead, and zinc statistics are embodied in a publication of the Bureau of the Census for 1929 containing a series of 23 informative tabulations with interpretive text. Outstanding in the material presented is the trend toward the concentration of the conduct of metal production into a lesser number of operating companies, partnerships and individuals, thereby permitting of the application of a higher technique and more modern treatment with resultant economies in production so greatly to be desired in these days of difficult competition in world trade. The total value of the products is impressive, bearing in mind that gold, silver, copper, lead and zinc only are included in the total value of $425,831,855. Another important fact presented lies in the consumption of these primary industries of the products of manufacture, as well as of fuel and purchased electric energy. The supply bill totaled nearly $69,000,000; fuel, $11,000,000+; and purchased electric energy $14,000,000. While it is true that the number of persons engaged in the production of the above minerals has decreased somewhat over the period 1919-1929, there has been a marked increase in the commodities taken by the mining industry and thereby employment is indicated, which will more than offset the decrease in mining employment.

The trend toward specialization is shown in the power tabulations wherein although the aggregate horsepower increased 64.8 percent during the period 1909-1929, that of prime movers decreased 12.7 percent. In the meantime, electric motors driven by purchased electric energy increased 385.3 percent. The lesson is readily drawn that mining is in itself an industry which performs at its best when it can purchase its power from those specializing in power generation, enabling the entire attention of the mining industry personnel to be focused on their job, mining. The statistics for gold bring the realization that with the stimulus of gold's present commodity purchasing power and the outlet for the employment of labor which lies in the expansion of gold mining, the tabulation of 1929 will be a matter of interest and importance. The story of the last 10 years told by the census tables is heartening and encouraging. It speaks precisely of the "elimination of waste in industry," of an improved technique, of the development of mining, men, and properties second to none in the world.

The Tariff Commission announces an amendment of its rules of practice and procedure with discontinuance of the practice of publishing in "Commerce Reports" the full text of the formal public notices issued in connection with investigations.

Discontinuance of printing the notices in full was necessary because of the reduction of "Commerce Reports" to one-fourth of its former size in the interest of economy. Simple announcement of each investigation, hearing, etc., will, however, be published in "Commerce Reports." The text of the notices will continue to be published in "Treasury Decisions," and will be posted at the Commission's offices in Washington and New York.

Detailed information will always be available to persons who apply directly to the Tariff Commission.

Accorded the required degree of support by the industry, the revised simplified practice program covering wrought iron and steel pipe, valves and fittings will become effective October 1, 1932, according to an announcement by the Commerce Department's Simplified Practice Division.

The recommendation applies only to new installations and production of pipe, it was stated. It eliminates from the original recommendation the 3½-in. nominal inside diameter pipe from table 3, "double extra strong" pipe.

The Tariff Commission has issued a report entitled "Bases of Value for Assessment of Ad Valorem Duties in Foreign Countries." This compilation compares the provisions of law in 48 foreign countries, describing the method or basis of valuation to be used in applying ad valorem rates of duty to imported merchandise dutiable according to value. Naturally, the valuation provisions of foreign tariff laws show wide variations in form and in administrative detail. In substance, when their fundamental resemblances as to the basis of valuation for import duty are compared, all the statutory provisions included in this compilation show only two broadly similar types of valuation. One of these applies the ad valorem rates of duty to the value of merchandise in the exporting country, known as the f. o. b. value. The other applies the ad valorem rates of duty to the value of the goods at the place of importation, generally referred to as the c. i. f. value. The 48 countries covered in this comparison include all the leading commercial nations of the world which levy customs duties on imports according to value. Spain and Switzerland are omitted because they have no ad valorem rates in their customs tariffs.

Pennsylvania's ten anthracite counties produced for shipment a total of 55,963,275 tons of coal in 1931, according to compilations made by the Bureau of Statistics of the Pennsylvania Department of Internal Affairs and announced on September 7 by Secretary of Internal Affairs Philip H. Dewey. The tonnage, which does not include coal consumed at the mines, was valued at $284,955,400.

Secretary Dewey, in announcing these figures, pointed out that the coal industry did not escape the effects of the economic reconstruction era and that the production last year was lower than in the preceding year. During 1930, the Secretary said, anthracite mines produced 65,837,653 tons of coal valued at $347,792,200. This tonnage, likewise, is exclusive of the coal used for fuel at the mines.

In 1931, the various anthracite counties had 152 mining establishments operated by 136 corporations, six partnerships and 10 individuals. The mines gave employment to 137,887 persons, 6,604 being salaried workers, while 131,283 were wage earners. Of the wage workers in the industry, 67,917 were Americans, white, 267 were Americans, colored, and 63,099 were foreigners. Wage workers during the year were paid $165,088,800, while salaried employes received $15,713,700, a total pay roll of $180,802,500.

In 1930 there were 148 mining establishments in the anthracite fields, which furnished employment for 156,871 persons, including 7,114 salaried workers and 149,757 wage earners. The combined wages and salaries in that year amounted to $230,899,900, wage workers receiving $214,147,100, while salaried employes were paid $16,752,800.

Invested capital in the anthracite mining industry in Pennsylvania in 1931 totaled $432,299,600, while in 1930 capital investments amounted to $445,509,400.

The value of certain nonferrous metals recovered from secondary sources in 1931 is reported to the United States Bureau of Mines, Department of Commerce, as $110,674,600, which is $82,580,500, or 43 percent, less than in 1930, and the total quantity decreased 21 percent. This decrease in value was partly due to the much lower yearly average prices of copper, lead, zinc, tin, and antimony. The main decrease in quantity of secondary metals treated in 1931 was in copper and brass, which declined 27 percent, while the value decreased nearly 50 percent. The shipments of scrap copper to Europe were double those in 1930, while the shipments of scrap brass declined. The smelters that treat mainly primary material produced 62,206 tons less secondary copper in 1931 than in 1930. There was a decrease of 9 percent in secondary lead reported by smelters that treat mainly ore and bullion, and the decrease in output of lead in alloys reported by smelters that treat scrap and drosses was 22 percent. The zinc recovered by redistillation decreased about 13,200 tons, and the zinc recovered in scrap brass was much less in 1931 than in 1930. There was little change in the quantities of zinc dust, lithopone, zinc chloride, and zinc sulphate made from zinc dross and zinc residues.

The practices followed by successful metal-mine operations throughout the country in the management of labor have been collected and summarized in a recent publication of the United States Bureau of Mines, written by C. W. Wright, chief engineer, Mining Division. The report should be of particular interest to managers of metal mines who, in addition to the worry caused by decline in metal prices and markets, are beset by problems relating to employes that are of minor importance in normal times. Pay systems in vogue in the principal metal mines of the United States, Canada, and Mexico are then treated in a broad manner and the advantages and the disadvantages of day's pay, contract, bonus, and leasing systems of payment are respectively pointed out. Further details are given in Information Circular 6650.

The methods employed in recovering gypsum by both open pit and underground openings at Arden, Nev., are described in detail by W. G. Bradley, production manager of the Blue Diamond Corporation, in a recent publication of the United States Bureau of Mines.

The paper discusses briefly the geology of the deposit, the method of exploration used, the mining methods in considerable detail, and the tramway and crushing and screening equipment. Detailed costs are shown in both dollars and cents and in man-hours per ton in two tabulations for the entire year 1930. The report is complete with illustrations of equipment, flow sheets, and organization chart.

With the MANUFACTURERS

Conveyor belt problems in many industries, advantages of the belt conveyor, details of belt construction and suggested applications are discussed in "How Shall We Handle It," a recent publication of the Diamond Rubber Company, Inc., Akron, Ohio.

The Trumbull Electric Mfg. Co., Plainville, Conn., have announced the addition to their "R. B." Industrial Switch line of the 30, 400, 600, and 800 ampere sizes, making available a complete line of "R. B." switches 30 to 800 amperes, inclusive, 2, 3, and 4 pole, 230 and 575 v. a. c., both side and front operated.

Circular No. 99 describing this line in detail sent on request.

By vote of the employes' representatives of the Schenectady works of the General Electric Company, the 2 percent deduction from wages in behalf of unemployment emergency relief will continue through the coming winter. The Works Council, made up of representatives of all the shop workers in the plant, took this action upon the expiration of the previous period for which the 2 percent deduction instead of 1 percent had been maintained. It was decided to continue the 2 percent deductions until April 30, 1933, if necessary, and the company, concurring as before, will contribute dollar for dollar with the employes.

The Linde Air Products Company, New York, announces a new booklet describing the physical and welding characteristics of a new bronze welding rod, with which it is possible to obtain tensile strengths in joining steel of between 56,000 and 60,000 pounds per square inch and ductility in excess of 30 percent. Marked decrease in fuming and excellent weldability are other outstanding characteristics.

"Rock Drills and Sharpeners" is the title of a 32-page illustrated condensed catalog which consolidates in one volume essential information concerning Ingersoll-Rand equipment for drilling rock and for reconditioning drill steels. In addition to describing the various rock drills, including "Calyx" core drills, the booklet covers all accessory equipment and also contains instructions for correctly heat-treating drill steels. Copies of the catalog, Form 4101, may be obtained from the general offices of Ingersoll-Rand Company, 11 Broadway, New York, or from any of the company's branch offices.

The WD Sharpener, something new in well-drill-bit sharpening machines, has been announced by Ingersoll-Rand Company, 11 Broadway, New York. According to the manufacturer, actual reports from quarries indicate that the bits it produces effect a saving of from 50 to 61 percent in drilling costs and that these bits can be produced at a saving of 50 percent in sharpening costs.

A new bulletin, No. 1472, Superior McCully Crushers, is announced by Allis-Chalmers Manufacturing Co.

Substantially reduced prices together with reductions in size, rating for rating, are among the advantages of a new General Electric line of capacitors for power-factor correction.

A MODERN TIPPLE

(*Continued from page* 19)

a 5-hp. motor. As previously mentioned, the rock is by-passed through a chute direct to a rock bin at the discharge end of the main belt conveyor, and after the rock run is completed the by-pass gate closed and the coal again passes over the inspection table to the shaker screens.

The trip feeder, rotary dump, and all conveying equipment, including the main 48-in. belt conveyor, were designed and built by Link-Belt Co.

Bottom rock is lifted in all haulage entries, and this rock, together with the gob from clay veins, which are characteristic of the No. 5 vein, necessitates the disposal of considerable gob on the surface. From 8 to 10 percent of the total tonnage dumped is rock and mine refuse. The rock discharged from the main-slope conveyor into the rock bin on the outside is loaded through a tilting lip gate into the bucket of an aerial tramway, which carries it to the refuse pile. The aerial tramway is a Broderick and Bascom 60 cu. ft. single bucket installation operating over a dumping range of about 600 ft. at a rate of 50 tons per hour. The cable on which the bucket carriage operates is a lock-coil cable 1¾ in. diameter, and is supported by a 60-foot wooden breakover tower located 200 ft. from the loading station and a 100-ft. steel tail tower which is 980 ft. from the loading station. The storage for refuse provided by this layout is approximately 500,000 tons.

All mine supplies are transported into the mine through an auxiliary slope, equipped with track and a small geared electric hoist. Mine cars, locomotives, and mining machines requiring repairs in the shop are also handled through this slope. This slope, in addition, serves as an entrance and exit for men and mules.

The improvements and new equipment have now been in operation at this mine for over a year and have more than fulfilled the original estimates as to the reduction in costs that they would effect. The following table compares the best month's operation before the mine was rehabilitated with a good month's operation since the rehabilitation has been completed:

	Before rehabilitation	After rehabilitation
Average daily tonnage	2,297	3,481
Average number face men working daily (miners and machine men)	268	406
Average daily tonnage per face man	8.57	8.57
Average daily number of all other employes except face men	120	110
Average daily tonnage per employe except face men	19.14	31.64
Total number employes, daily average	388	516
Maximum daily tonnage	2,595	4,072

In the hand-loading mines of Illinois, the miners and machine men are paid on a tonnage basis and the costs of cutting and loading are fixed charges in the total cost of production. All other employes are paid on a daily or monthly basis and any reduction in the total labor cost for the mine must be obtained by increasing the tonnage produced per employe in this class of labor. The above table shows that the average tons produced per loader and machine man has not been affected by the modernization and rehabilitation of the mine, but that the tons produced per "all other employes" has been increased 65 percent. Inasmuch as the mine has not operated at over 75 percent of its rated capacity since the completion of the improvements, due to market conditions, it is felt that some further improvement in operating efficiency will be shown when operating at capacity.

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SAFE INSTALLATION OF ELECTRIC CABLES

(*Continued from page 22*)

ON ACCOUNT of the danger from falling chunks in the shaft, splices and taps should be made in the stations or pump rooms wherever feasible. Lead-covered cables require terminal pot-heads for moisture protection and static shielding, and splices require wiped or clamped joints, filled with compound. Rubber-covered armored cables without lead may be terminated by serving the armor wires about a foot and a half from the end, bending them back on the cable and reserving the ends to form a static shield. Pot-heads and splice boxes, if used, can be furnished with armor clamps if desired. In making an extension to an existing cable, there is an advantage in an open splice, with or without pot-heads, rather than using a splicing sleeve or box, in that the cable can be conveniently tapped for power at a later time if necessary, or a defective section of cable can easily be cut out in case of duplicate cables. The armoring which serves as a static ground should be continuous electrically from top to bottom and well grounded to the shaft steel and other grounded structures. Breaks in the armoring at splices and taps should be shunted by suitable means.

Summer-time installations of shaft cables can be made with very little chance of damage to cables in handling. However, the mines are generally busiest on production work during the shipping season, and frequently the installation work must be done in the wintertime. Both varnished cambric and rubber cables require reasonable care in handling in cold weather, to avoid sudden bends and strains with the possibility of cracking insulation or lead sheath. Cable should be unreeled slowly and steadily, rather than with intermittent sharp jerks, and strain should be applied gradually. If possible, a time should be chosen when the weather is most likely to be mild, and if confronted by a spell of severe cold the job should be postponed if possible. If this is not possible, extreme care should be used, and a longer time taken to get the cable in the shaft.

The thought of "Safety" in the preceding paragraphs has been directed toward safety of equipment and cables and protection against material damage and mishaps. The safety of the crew installing the cable is another matter. Shaft work requires steady brains and hands and sure feet, and not all men are fitted for this work. Some otherwise good men have an obsession against going below the shaft collar, while others can not climb any appreciable distance above the ground. Most mines have a shaft crew available, and generally the mine electricians have sufficient shaft work to keep them in shape. A gang should be chosen which can work together harmoniously and efficiently. This is no work for anyone with unsteady hands or clouded brain. Reasonable safety precautions must be taken, but it may be necessary at times to leave the comparative safety of the ladder way or cage bonnet and climb out into the shaft. A well-organized crew, properly handled, can make the hardest job look easy, while inexperience or nervousness may tangle things up badly or result in serious injury or fatality.

TO SUMMARIZE BRIEFLY, safe and economical installations of electric cables in mine shafts call for the following requirements: First, a cable properly designed for the service requirements and method of installation. Second, the selection of the best method of handling and equipment to be used in lowering the cable. Third, the proper and thorough planning and preparatory work. And last, but not least, the choice of a suitable and adequate crew for the installation work, preferably with previous experience in handling cable. The criterion of a safe and economical installation is not how few men or how short a time it took to install the cable, but how well and securely was it installed without damage either to itself or other equipment or injury to the crew, and how well the hazard of subsequent damage has been minimized.

In line with modernization, the General Electric Company is vigorously pushing the construction of its big new power plant at Schenectady, which will cost $4,000,000. The final stack has been put in place and the present prospect is that the plant will be ready for operation next spring.

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This Jeffrey 52-B Belt Type Entry Conveyor receives coal from several room conveyors discharging laterally into it—or it receives coal from one or two long faces.

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THE American Mining Congress is an organization that represents the entire mining industry. Its sole purpose and effort is to help the mining industry and its members in every way possible. The proven value of this effort is abundantly evident in the long record of splendid results it has accomplished in the past and is accomplishing today.

ITS moderate annual Individual Membership fee is only $10. This fee not only contributes to the nation-wide work the A. M. C. is doing and from which the Individual Member positively though indirectly benefits, but it also entitles him to many immediate and direct privileges.

HE is extended the right of Personal Consultation on any mining subject within the scope of the organization. He receives from Washington each week a special A. M. C. Government Bulletin. He receives a year's subscription to the Mining Congress Journal—"The Spokesman of the Industry." He is entitled to a direct voice in the national election of officers.

IF you are not now a member of the American Mining Congress do not hesitate to join any longer. Add your strength and influence to that of the many thousands of your fellow mining men who are not satisfied with merely *wanting* to better conditions in your industry, but are interested enough to *do something about it!*

SEND in your membership *today!*

The

AMERICAN MINING CONGRESS

WASHINGTON, D. C.

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FEDERAL TAXATION TODAY

(*Continued from page* 11)

The new rates are indeed severe and place the income taxpayer upon a war basis. In the emergency these rates may help, but they are much above the point at which the Treasury believes income taxes to be most productive in normal times.

The tax base to which individual income tax applies was broadened by reduction in personal exemptions so that it is estimated it will increase the number of individuals paying taxes by about 85 percent, and also increase the amount of income to which the tax will apply for individuals already in the taxpaying group.

The main increase in the yield of individual income taxes will come from the very drastic increase in surtaxes and from the operation of the new provision which, except in the case of securities held for two years or more, limits the deduction of losses on sales of securities to income derived from gains from such sales. This is a drastic change. Until the enactment of the last revenue act there was no limitation on losses from sales of securities within a two-year period which the taxpayer might deduct from his income from any source. In the past many taxpayers have been able to offset losses from the sale of securities against business profits, interest, dividends, salaries, and the like, which clearly represents taxpaying ability in a given year. The new act makes no change in the provision limiting the tax on so-called capital gains to 12½ percent, or limiting the right to deduct capital losses; that is, losses on sales of securities held for two years or more. Other changes were made in structure and the administrative provisions of the income tax designed to close loopholes, as, for example, through the use of foreign corporations as a medium for the realization of profits without liability for Federal tax.

The income tax rate on corporations was increased from 12 percent to 13¾ percent, with an additional tax of three-fourths of 1 percent on corporate income reported on consolidated returns. The exemption previously allowed for corporations with small incomes was eliminated. The Treasury felt that the increase in the corporation rate was too large. Increasing the flat rate upon corporations works injustice in that the flat increase does not and can not take into account ability of the corporation to pay.

It is the well-established policy of the Treasury to favor permitting the determination of taxable income to be made in accordance with sound business practices. The Treasury, therefore, opposed the application of an additional rate to income reported upon consolidated returns of affiliated corporations. To have the income of affiliated corporations reported in a single return is not to extend a privilege; it is to recognize for tax purposes the same basis of reporting income which is used alike for stockholders and for financial statements.

Estate taxes were very sharply increased through the medium of an additional tax which carries the graduated rate up to 45 percent of net estates in excess of $10,000,000, with a minimum exemption of $50,000, as compared with a maximum rate of 20 percent and a specific exemption of $100,000 under the previous law. A fundamental difficulty with high estate tax rates has been abundantly illustrated by the condition of estates transferred in 1929 and 1930, when security values were comparatively high, now confronted with taxes which, even under the moderate rates of the prior law, may in some instances amount to more than the present value of the securities. The bill provided for a cumulative gift tax with rates designed to be about three-fourths of the estate tax rates.

The excise taxes provided for under the bill are a somewhat miscellaneous group, many of them yielding comparatively small amounts and resting upon industries which have no special taxpaying ability. The miscellaneous taxes do include an important 1-cent tax on gasoline and taxes of 3 percent on sales of automobiles and of 2 percent on trucks, and on parts and accessories. The tax upon checks at 2 cents each was a relatively important new levy.

Miscellaneous taxes under the new bill are yielding sharply increased amounts of revenue as compared with last year, notwithstanding the decline in business during the year. For example, for the month of September and the first two weeks of October miscellaneous internal revenue receipts aggregated about $120,000,000 as compared with $68,000,000 for the corresponding period of last year. The yield of the new check tax increased up to more than $3,787,000 for the month; documentary stamp tax receipts rose to over $7,569,000, and the yield on the gasoline tax to over $11,410,000.

ACCUMULATED DATA as to the operation of the new act will form the basis for estimates as to the full revenue effect of the measure during a period including the fiscal year 1934, which will be submitted by the Secretary of the Treasury to Congress when it convenes in December. It should be remembered that the complete effect of the new revenue act will not be gained until the fiscal year 1934, partly for the reason that the new income tax rates were not made to apply on incomes for 1931, as the Treasury recommended, but begin to apply with incomes of 1932.

In the year in which the enactment of any new revenue measure presented almost overwhelming difficulties, the placing upon the statute books of a revenue measure so substantial in its scope as the Revenue Act of 1932 was an impressive accomplishment. The defeat of unsound financial proposals and the enactment of improved budget legislation carried assurance of the financial integrity of our Government. This was immediately shown by the dissipation of fear and the development of confidence.

The new measure is in many respects temporary and there are many points which are subject to improvement and inequities which call for remedy. Revision of the tax law in substance, involving inevitable disturbance of business, should never be undertaken until the necessity and wisdom of that course are established beyond doubt. Ultimate development of the Federal tax system must include the harmonizing of Federal tax policy and procedure with those of the states so as to render the whole tax burden less and more fairly distributed.

There must be sound and constructive national leadership in this field. Adequate leadership toward progress in taxation must today take in a far broader field than that of the immediate problem of expenditure and taxation. Satisfactory taxation requires sound and satisfactory business activity. Progress toward the great objectives in taxation necessitates leadership in promoting business recovery and full resumption of normal economic activities.

Freight traffic handled by the Class I railroads of this country in the first seven months of 1932 amounted to 147,002,378,000 net ton-miles, according to reports just received by the Bureau of Railway Economics and made public today. This was a reduction of 57,617,114,000 net ton-miles or 28.2 percent under the corresponding period in 1931 and a reduction of 100,838,428,000 net ton-miles or 40.7 percent under the same period in 1930. Railroads in the eastern district for the seven months period in 1932 reported a reduction of 25.9 percent in the volume of freight traffic handled compared with the same period in 1931, while the southern district reported a reduction of 30.7 percent. The western district reported a decrease of 30.4 percent.

LITTLE • JOURNEYS • INTO • LUBRICATION • LOGIC*

"60 Days" wasn't enough . . .

YOU Mining Men who prefer and operate plain-bearing mine cars—if you like true yarns that show you how to *save real money,* here's the Birth-Story of one of the season's Biggest Sellers—

Listen in!

It all happened the day the Old Man wanted to step up tonnage—with not enough mine cars down in the mine and too many "down" in the repair shop—

• • • •

"Say, Jim," snapped the Super to the Purchasing Agent, "are we in the car greasing business around here or the coal business? Shop's full of cars in for repairs. We're forcing tonnage for important orders; we can't haul the coal and the Big Boss just gave me a Hot Session that *burns*—can't we get a grease that will stay in those plain-bearing wheels instead of making 'oiled highways' and car-shoppage costs that are driving us all into the Mad House if it doesn't stop soon?"

The P. A. grinned. He knew what wheel shocks and back collar wear was doing—and cavities plugged with residue that left little room for grease, no matter how often it was applied Puffing on his pipe, he countered cautiously—"I'll look into it, Tom, but we've got to tell the Old Man to stop making us buy our car greases on a *price basis* by the pound, or from the 'Ko-Kus Company' because they occasionally buy some of our coal! We've got to turn to *mine car grease specialists* and there's only one *real* specialist in the crowd and that's HULBURT

• • • •

A few days elapsed. Then one afternoon the P. A. stacked his meeting with the Old Man, the Super and the Master Mechanic. Turning the floor over to the Hulburt Man he had called in, this is what they heard—

"Gentlemen, your problem can be fully met with Hulburt's Heavy Mine Car Grease, developed especially for plain-bearing mine cars. It is manufactured from a heavy mineral oil, which insures a uniform density, which is less affected by extremes of temperature than other liquid mine car greases. Its density will *stay* correct for proper feeding and yet insure ample lubrication for the back collar. It will never leave any residue in the cavity. It is 100% water proof so that when your cars run through or stand in water the bearings are perfectly protected by the waterproof film of grease. Its free fatty acid content is *below* ½ of 1% for absolute insurance against any *pitted* bearing surfaces. We insure bearing life you haven't been getting and a maximum protection against the shocks of shifting and haulage movements. But"——(and here he paused).

"But what," queried the Old Man who was now taking the lead

"Well frankly, Mr. Jones, we can't sell you this Hulburt product the way you've been buying greases. You have considered the price per pound only. If you buy Hulburt grease, it will be necessary that you want *lower cost lubrication* rather than *lower cost lubricants.* On that basis we'll guarantee to stack its economy against all-comers."

"Say lad," smiled the Old Man, "you know what Lincoln said. They're through fooling me now. Get that product on the job here—these boys want coal and lower costs on our car maintenance—and I'm one Scotchman that knows how to spend an extra nickel that will make a dime!

• • • •

May we show you records of wheels lubricated by this Hulburt Heavy Mine Car Grease for 12 years, and that still show no appreciable wear and no semblance of residue in the cavities? That's why we sell it under the broad guarantee that it *must* show a saving to the customer and that *he* must be the sole judge as to its *unmatched economy.*

***Note*—This message to Mining Congress Journal readers is one of a series of monthly "Little Journeys into Lubrication-Logic" with Hulburt's veterans in coal mine lubrication engineering. Remember, the Hulburt representative is always equipped with training, experience and the correct lubricants to assure you *more for your money from every penny you spend for lubrication.* Pick out your toughest bearing and lubrication problem, and call him in now.**

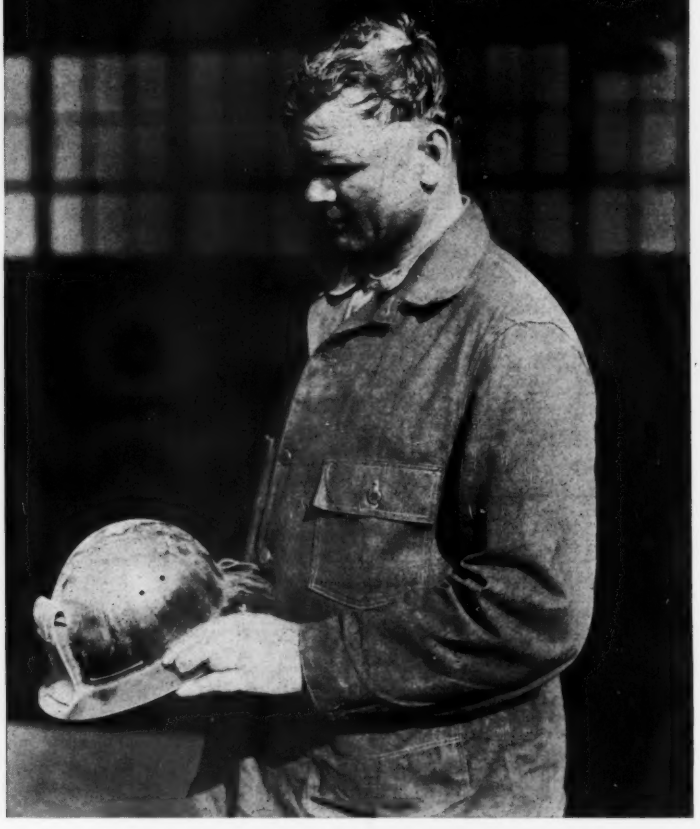
HULBURT

Specialists in Coal Mine Lubrication

HULBURT OIL & GREASE COMPANY

PHILADELPHIA, PA.

Head Protection Pays



ANOTHER SERIOUS HEAD INJURY AVERTED!

This miner was caught under a heavy fall of roof which knocked him violently to the ground but his DOUGHBOY HAT saved his head from injury.

M-S-A PROTECTIVE HATS and CAPS

Are Reducing Head Injuries

Many of our friends have informed us of unusual instances where the use of M-S-A PROTECTIVE HATS and CAPS have averted serious head injuries . . . No matter what the job may be, if it in any way involves the possibilities of head injuries, we strongly recommend that Adequate Head Protection be provided before work is started.

M-S-A PROTECTIVE HATS and CAPS are available in seven different models. Write for descriptive literature and details.

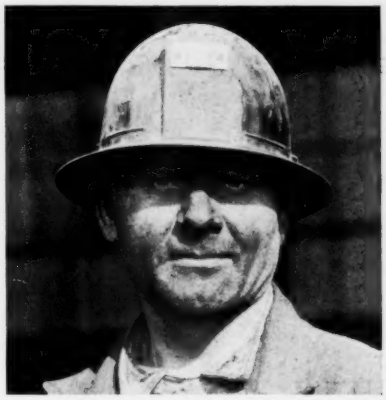
OUR REPRESENTATIVE WILL BE PLEASED
To Arrange a Demonstration for You

Mine Safety Appliances Co.

Braddock, Thomas and Meade Sts., Pittsburgh, Pa.

"EVERYTHING for MINE and INDUSTRIAL SAFETY"

Three of the Seven Models of M-S-A Protective Hats and Caps



DOUGHBOY HAT

For use in coal and metal mines and construction work, in general, where head hazards may exist.

TYPE "B" SKULLGARD

A new, light-weight protective cap developed especially for the coal mining industry.

TYPE "C" SKULLGARD

A new light-weight protective cap, with flexible brim, especially adaptable to metal mining operations.